



**Harrison**

**Harrison M300**

**330mm — 13in swing centre lathe**

**machine manual**

# machine manual

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# Machine Specification

## 330mm (13in) swing CENTRE LATHE

630mm MODEL — 630mm (25") between centres

1000mm MODEL — 1000mm (40") between centres

This machine is manufactured to British metric standards throughout, and is available in two bed lengths each with either gap or straight bed versions.

A left or right hand apron handwheel and either Metric or English drive screws (together with the appropriate micrometer dials) are optional variations.

### summarised specification

<b>Centres</b>	Height	167mm ( $6\frac{9}{16}$ " )	<b>Feeds</b>	16 Metric (R.10 Series)	from .03 to 1mm/rev.
	Admits between	635mm (25")		16 English	from .001 to .040"/rev.
	or	1000mm (40")			
<b>Swing</b>	Over Bed	330mm (13")	<b>Cross Slide</b>	Cross Feeds Half Longitudinal Values	
	Over Cross Slide	210mm ( $8\frac{1}{4}$ " )		Width	140mm ( $5\frac{1}{2}$ " )
	In Gap	480mm (19")	<b>Top Slide</b>	Travel	190mm ( $7\frac{1}{2}$ " )
	Diameter	115mm ( $4\frac{1}{2}$ " )		Width	82mm ( $3\frac{1}{4}$ " )
<b>Spindle</b>	Bored to Pass	38mm $\varnothing$ ( $1\frac{1}{2}$ " $\varnothing$ )	<b>Tool</b>	Travel	92mm ( $3\frac{5}{8}$ " )
	Nose	No. 4-D1		Max. Section	16 x 20mm ( $\frac{5}{8}$ " x $\frac{3}{4}$ " )
		Camlock	<b>Tailstock</b>	Quill Diameter	42mm ( $1\frac{23}{32}$ " )
	Morse Taper in Nose	No. 5		Travel	110mm ( $4\frac{3}{8}$ " )
	in Bush	No. 3		Morse Taper	No. 3
<b>Speeds</b>	Number	12		Set-Over	$\pm 12$ mm ( $\pm \frac{1}{2}$ " )
	Progression Ratio	1.46			
	Range	40 to 2500 r.p.m			
<b>Motor</b>	(1500 r.p.m. @ 50Hz)	2.2kW 3hp	<b>Weight</b>	630mm Model	
<b>Leadscrew</b>	Diameter	28mm ( $1\frac{1}{8}$ " )		630mm (25") Cts	583kg (1288 lbs)
	Thread	6mm pitch or 4 TPI		1000mm Model	
				1000mm (40") Cts	685kg (1512 lbs)
<b>Threads</b>	39 Metric Pitches	from 0.2 to 14mm Pitch			
	35 English Pitches	from 2 to 56 TPI			
	18 Module Pitches	from 0.3 to 3.5 MOD.			
	18 Diametral Pitches	from 8 to 56 DP			

### standard equipment

Single Toolpost  
Work Driver Plate  
No. 5/3 Morse Centre Bush  
2 No. 3 M.T Centres

Spanners, Keys and Oil Gun  
Machine Manual  
& Standard Inspection Certificate

4.75

*Illustrated or specified data is not binding in detail: The manufacturers reserve the right to modify design, specification and price without notice.*

# Installation



## Lifting

The approximate weights of the machine are:-

630mm Model (630 mm/25" between centres) 583 kg (1285 lb).

1000mm Model (1000 mm/40" between centres) 685 kg (1512 lb).

The machine should be lifted using the eye-bolt supplied (SEE GENERAL ARRANGEMENT AND FOUNDATION PLAN) with the apron/saddle assembly positioned, as despatched, towards the tailstock end of the bed.

Alternatively, a rope sling may be used, being looped under both ends of the swarf tray.

## Cleaning

Bright surfaces are coated with an anti-corrosive compound at despatch and this must be completely removed using White Spirit or Paraffin (Kerosene) before operating the controls or moving the slides. DO NOT USE CELLULOSE SOLVENTS. Oil the bright surfaces and slideways AFTER CLEANING. (see Lubrication diagram).

## Positioning

Locate the machine on a solid foundation allowing sufficient area for operation and maintenance access. (SEE GENERAL ARRANGEMENT AND FOUNDATION PLAN).

The lathe may be used when free standing, but for maximum performance it should be bolted down.

- (1) **Free standing.** Position the machine on its foundation and adjust each of the four levelling screws to take an equal share of the weight. Then using an engineer's precision level on the bedways make further adjustments for level conditions.
- (2) **Fixed installation.** Position the machine over four 12 mm (1/2") diameter foundation bolts, set to suit the base. (SEE GENERAL ARRANGEMENT AND FOUNDATION PLAN).

Accurately level the machine as in (1), then tighten the foundation bolts evenly to avoid distortion and finally re-check for level conditions.

## Electrical Supply

Power should be supplied through an external fused isolator recommended fuses being 25 amp for 220 volts supply and 16 amp for 380 to 440 volts supply. External wiring should be of a permanent character and be undertaken by a competent electrician. Electrical entry is at the rear left-hand end of the cabinet. (SEE GENERAL ARRANGEMENT AND FOUNDATION PLAN).

Line connections should be to the isolator terminals and a substantial earth continuity conductor must be connected to the earth terminal on the panel. (SEE ELECTRICAL WIRING DIAGRAM).

Main spindle rotation must be anti-clockwise (looking from tailstock) for a downward movement of the spindle control lever. Interchanging two line connections should rectify wrong direction of rotation.

## **Lubrication** (Refer to Lubrication diagram)

Ensure that the headstock, gearbox and apron are filled to the level of the relevant oil sight windows operate the centralised slideway lubrication system by pulling and releasing the knob at the bottom corner of the apron and oil the cross-slide nut, dials and changewheel stud etc. through the appropriate oil nipples using the oil gun provided.

## **Running-in**

For optimum bearing life and performance it is recommended that high spindle speeds be avoided during the initial life of the machine.

Alternatively a running-in procedure should be adopted as follows: -

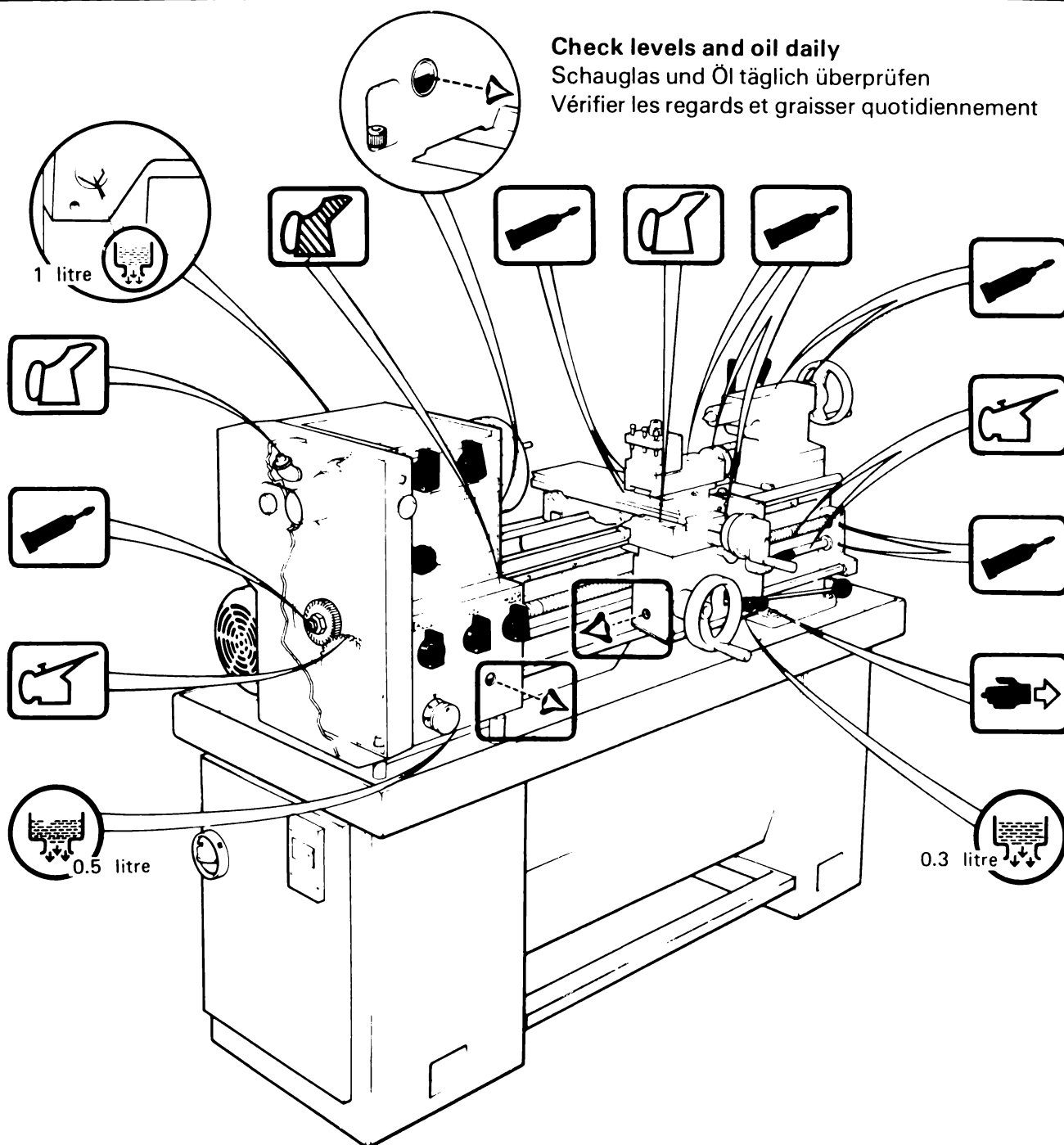
Make a low feed rate selection and run the machine light for 3 hours at 540 rpm  
then for 2 hours at 800 rpm  
then for 1 hour at 1200 rpm  
then for 1/2 hour at 1700 rpm

# Lubrication

**Check levels and oil daily**

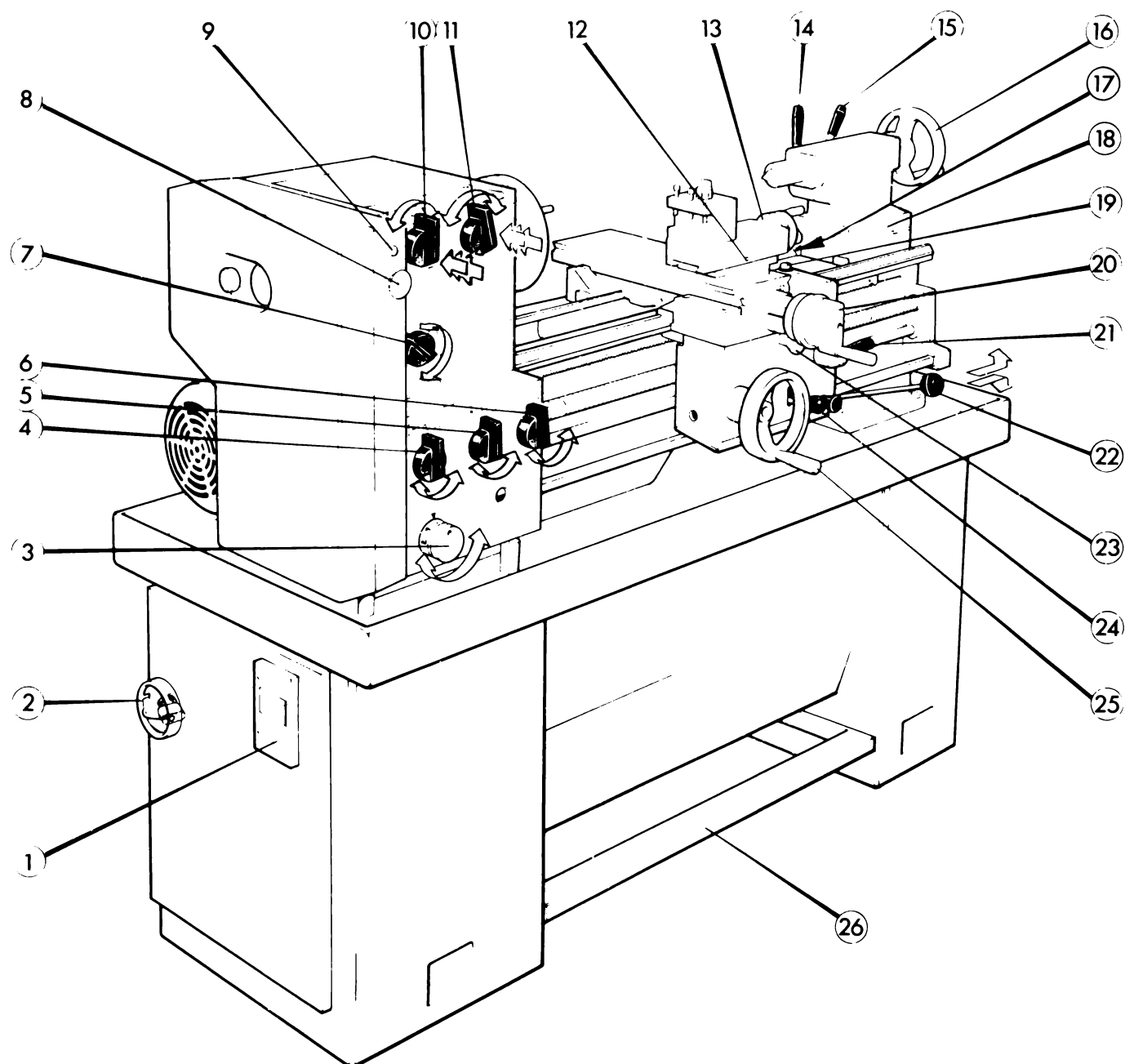
Schauglas und Öl täglich überprüfen

Vérifier les regards et graisser quotidiennement



Mobil	BP	Castrol	C	Esso	Shell	TEXACO
DTE OIL HEAVY MEDIUM	ENERGOL HLP 68 (ISO)	HYSPIM AWS 68	P W.L.C	NUTO H68	TELLUS 68 OR R68	RANDO HD 68
DTE EXTRA HEAVY	ENERGOL HP 150 (ISO)	ALPHA ZN 220	WLM	NURAY 100	VITREA 220	REGAL R & O 220

# Operation



- |  |   |  |
|--|---|--|
| 1. COOLANT PUMP STARTER<br>(When fitted) | 10. SPEED SELECTOR                                    | 18. TAILSTOCK SET-OVER<br>SCREW        |
| 2. MAINS ISOLATOR                        | 11. SPEED SELECTOR                                    | 19. CARRIAGE LOCK                      |
| 3. FEED SELECTOR DIAL                    | 12. TOP SLIDE LOCK                                    | 20. CROSS TRAVERSE HANDLE              |
| 4. FEED SELECTOR HANDLE                  | 13. TOP SLIDE TRAVERSE<br>HANDLE                      | 21. THREADCUTTING<br>ENGAGEMENT        |
| 5. FEED SELECTOR HANDLE                  | 14. QUILL LOCK  | 22. SPINDLE CONTROL LEVER              |
| 6. FEED SELECTOR HANDLE                  | 15. TAILSTOCK CLAMP                                   | 23. FEED AXIS SELECTOR                 |
| 7. FEED DIRECTION<br>SELECTOR            | 16. QUILL TRAVERSE<br>HANDWHEEL                       | 24. FEED ENGAGE                        |
| 8. EMERGENCY STOP                        | 17. CROSS-SLIDE LOCK<br>(In R.H. side of cross-slide) | 25. LONGITUDINAL TRAVERSE<br>HANDWHEEL |
| 9. 'SUPPLY ON' LAMP                      |   | 26. BRAKE PEDAL                        |

## Starting the Machine

1. Ensure that lubrication has been carried out in accordance with the Lubrication diagram.
2. Check that the spindle control lever (22) is in the central (STOP) position, the feed engage lever (24) and thread-cutting lever (21) are in the disengaged positions and that the changewheel cover is firmly secured in place.
3. **Select** Feed Axis i.e. cross or longitudinal by means of the apron push-pull knob (23).  
**Select** Direction of feed by means of the headstock lower selector handle (7)  
**Select** \*Feed Rate by referring to the charts on the headstock and selecting (in the sequence listed) the appropriate positions on the gearbox selector dial (3) and handles (4), (5) and (6) (Engagement of the feed gears may be assisted by turning the main spindle)  
**Select** \*\*Spindle speed by means of the selector handles (10) and (11).  
NOTE: THE SPINDLE SPEED SELECTORS ARE TO BE PUSHED IN BEFORE TURNING AND THAT SPEED SELECTIONS ARE TO BE MADE ONLY WHEN THE SPINDLE IS STATIONARY  
(Engagement of the drive gears may be assisted by manually turning the spindle).
4. Switch on the electrical supply at the mains isolator (2) which is the red knob at the L.H. end of the cabinet, when 'SUPPLY ON' will be indicated by the white lamp (9) mounted adjacent to the emergency stop push-button (8).
5. Start the spindle in the direction of rotation required by lifting (FOR REVERSE) or lowering (FOR FORWARD) the "gated" spindle control lever (22) on the apron.
6. Start and stop the feed motion as required by means of the feed engage lever (24).

## Stopping the Machine

The machine may be stopped in the following ways:

Return the spindle control lever (22) to its central (STOP) position  
OR Depress the full-length foot-brake pedal (26)  
OR Press the emergency stop push-button (8).

## Operational Notes

CHUCKS	USE ONLY HIGH SPEED TYPES
FACEPLATES	NOTE MAXIMUM SPEEDS:- 1200 rpm for 300 mm (12") dia. and 800 rpm for 460 mm (18") dia.
COARSE FEED RANGE	(i.e. when secondary changewheels are inverted to give 88/44T) SHOULD NOT BE USED WITH SPINDLE SPEEDS ABOVE 540 RPM.

### NOTES

- \* Feed selections from the charts automatically disengage the leadscrew drive at the gearbox (i.e. by calling for selector position X) and for minimum wear the thread indicator dial should be disengaged by swinging the pinion out of mesh with the leadscrew when not in use.

- \*\* See Installation instructions (RUNNING-IN) if starting the machine for the first time.

continued

### Operational notes continued

Micrometer dials are direct reading (for work piece diameter reduction on the cross-slide) and are of the friction-grip type for easy index settings.

Longitudinal traverse handwheel (25) may be disengaged by pulling it away from the apron face.

**Tailstock set over adjustment** is provided in the form of socket screws (18) mounted in each side of the tailstock body, a similar but 'location-screw' is fitted in the rear face of the body.

Set-over adjustment is made as follows: -

Unclamp the tailstock (lever (15))

Slacken the rear 'location-screw' (say one half turn)

**Then** Alternatively slacken one set-over screw and tighten the other until the required setting is achieved.

**And** Tighten the rear 'location-screw'  
Re-clamp the tailstock.

## MOUNTING OF CHUCKS, FACEPLATES and other SPINDLE MOUNTED ATTACHMENTS.

**Ensure** that the location faces on both nose and attachment are scrupulously clean.

**Check** that all the cams are in the release position (Fig. 1).

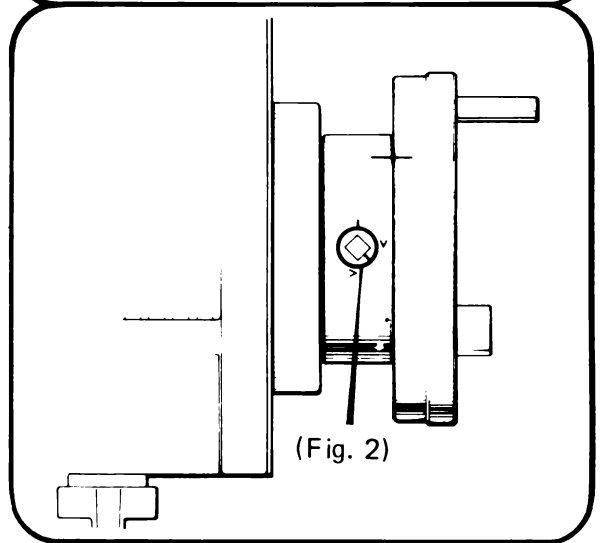
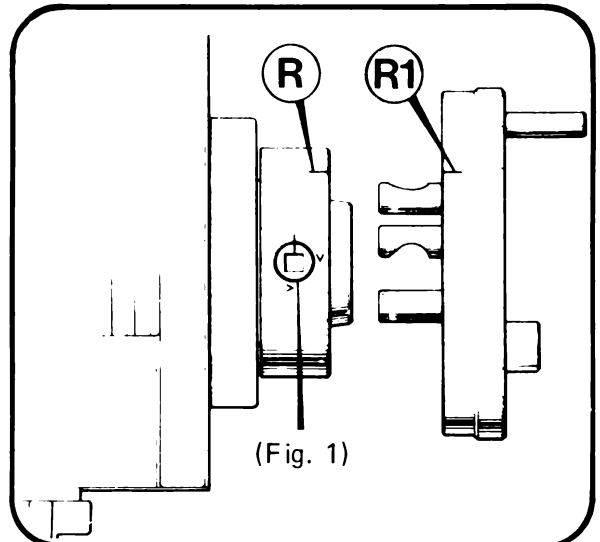
**Mount** the attachment on to the spindle nose and lock each cam by turning it clockwise using the key provided.

A reference line R1 (Fig. 1) should be scribed on each chuck or faceplate to coincide with the reference line R on the spindle nose. This assists subsequent re-mounting

### NOTE:-

For correct locking conditions each cam must tighten with its index line between the two vee marks on the nose (Fig. 2).

**DO NOT INTERCHANGE CHUCKS OR OTHER SPINDLE MOUNTING ITEMS BETWEEN LATHES WITHOUT CHECKING EACH CAM FOR CORRECT LOCKING.**



## TO ADJUST 'CAMLOCK STUDS'

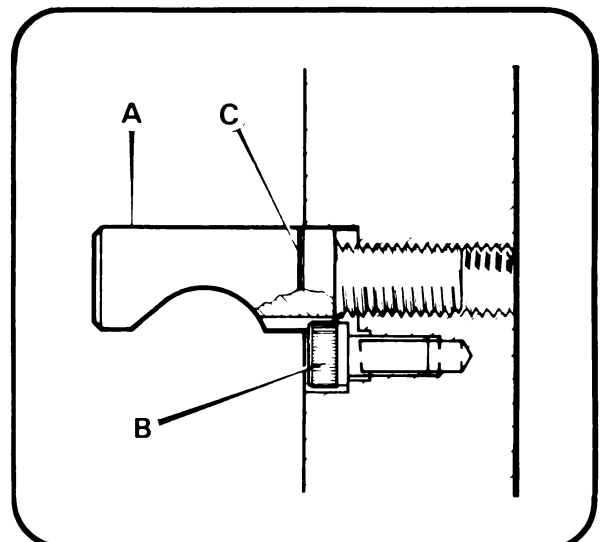
**Remove** Lockscrew (B).

**Turn** Stud (A) one full turn, in or out as required.

**Re-fit and tighten** lockscrew (B).

### NOTE:-

A datum ring (C) is marked on each stud as a guide to the original or initial setting.



## Spindle Nose

**(A) METRIC THREADS on METRIC LEADSCREW MACHINES**  
or  
**ENGLISH THREADS on ENGLISH LEADSCREW MACHINES**

For these threads it is recommended that the "thread indicator dial" be used this allows the leadscrew nuts to be disengaged at the end of each screwcutting pass, provided that they are re-engaged in accordance with the chart mounted on the front face of the dial unit.

**METRIC LEADSCREW MACHINES  
(METRIC THREADS ONLY)**

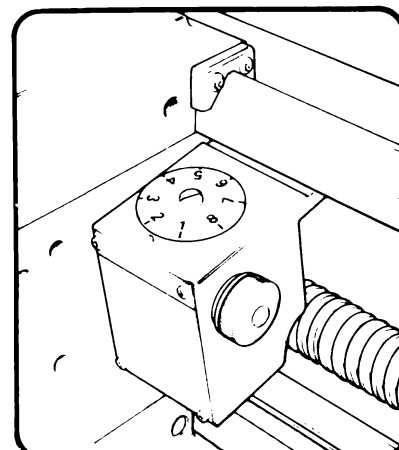
The chart shows:-

- in column 1. mm pitch to be cut.
- in column 2. (☼) The number of teeth in the 'pick-off gear' arranged to mesh with the leadscrew, (this being selected from the stack, stored on the bottom of the dial spindle).
- in column 3. The dial numbers at which the leadscrew nuts may be engaged.

**ENGLISH LEADSCREW MACHINES  
(ENGLISH THREADS ONLY)**

The chart shows:-

- in column 1. T.P.I. to be cut.
- in column 2. Dial numbers at which the leadscrew nuts may be engaged.



mm		
225	☼ 18 15	4 16 1-8
25	16 1 8	4 5 18 15
75	16 1 8	5 20 1357
1	16 1 8	5 5 22 15
1 25	20 1357	6 16 1-8
1 5	16 1 8	7 14 15
1 6	16 1357	8 16 1357
1 75	14 15	9 18 15
2	16 1 8	10 20 1357
2 5	20 1357	11 22 15
3	16 1 8	12 16 1 8
3 5	14 15	14 14 15
812		

ins		
2 1 8	8 1-8	22 1 8
2 1 15	9 1357	24 1 8
2 1 1	10 1 8	26 1 8
3 1357	11 1357	27 1357
3 1 1	11 1 15	28 1 8
3 1 15	12 1 8	30 1 8
4 1 8	13 1357	32 1 8
4 1 15	14 1-8	36 1-8
5 1357	16 1-8	40 1 8
6 1-8	18 1-8	44 1-8
7 1357	19 1357	48 1-8
7 1 15	20 1 8	56 1-8
813		

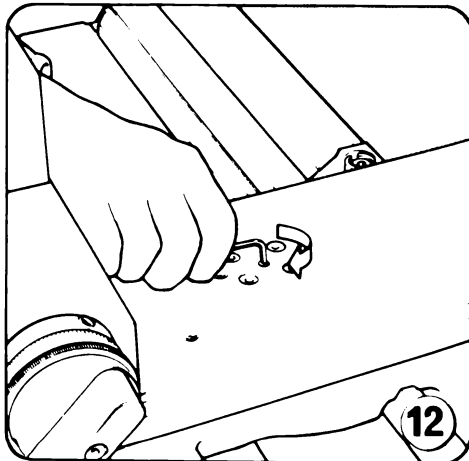
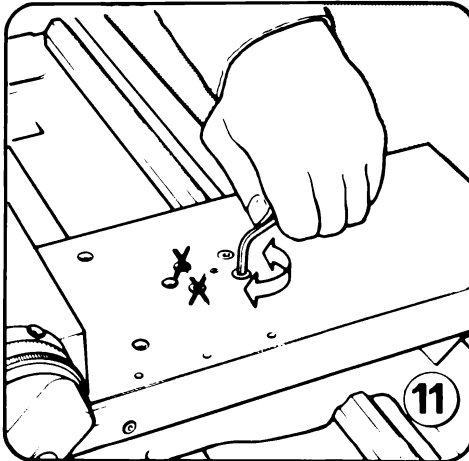
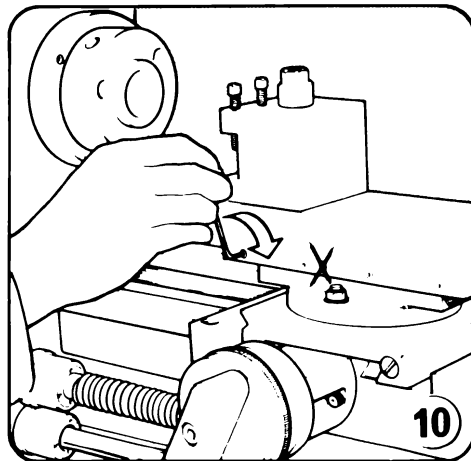
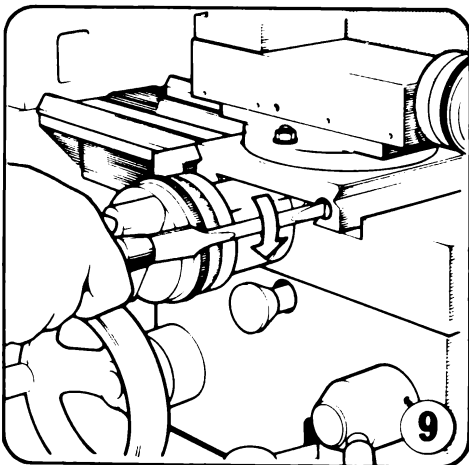
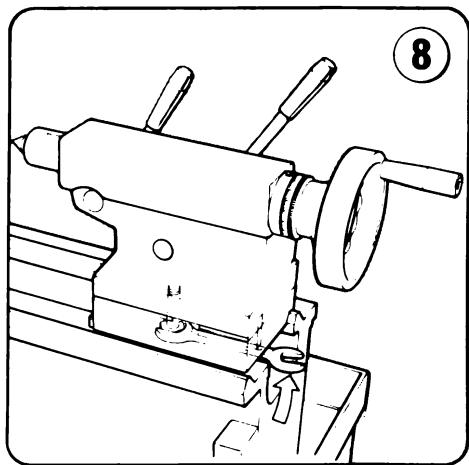
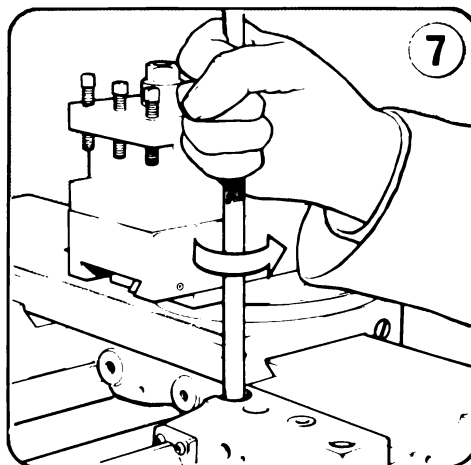
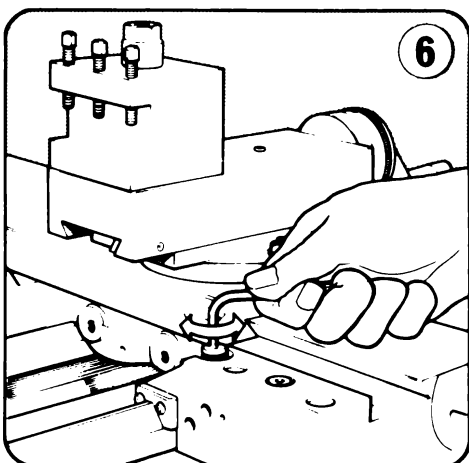
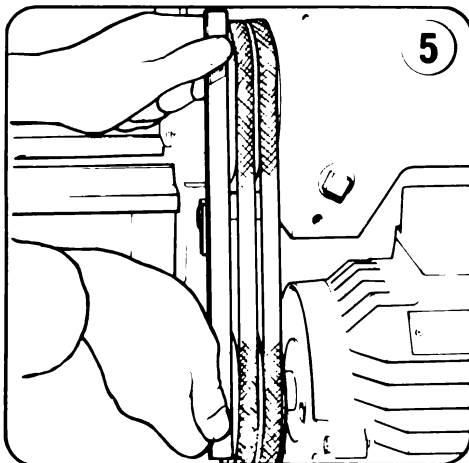
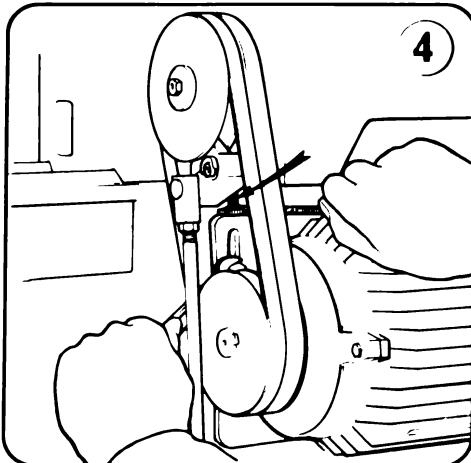
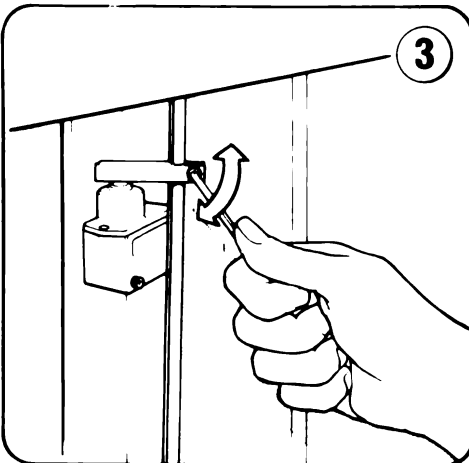
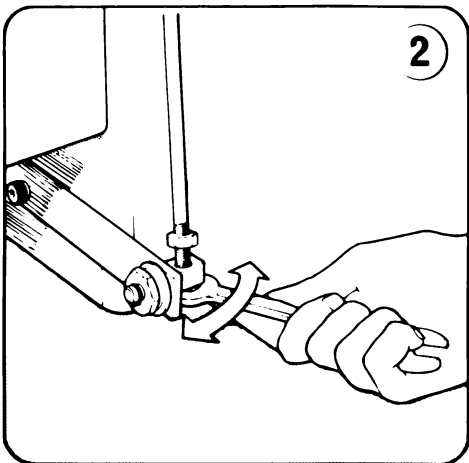
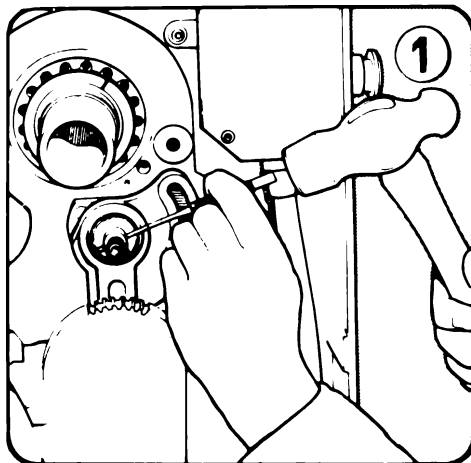
**(B) ENGLISH THREADS on METRIC LEADSCREW MACHINES**  
or  
**METRIC THREADS on ENGLISH LEADSCREW MACHINES**

For these threads the leadscrew nuts are kept engaged throughout the cutting of any one thread. This involves reversing the whole drive by means of the 'spindle control lever' (22) at each end of the screwcutting pass whilst at the same time relieving or increasing the cut as required.

(Threads 'A' may also be cut by this method).

## Thread – cutting

# Maintenance



## **Changewheel Shear Pin (Fig. 1)**

A protection against accidental overload in the end gear train is provided in the form of a shear pin fitted in the splined sleeve on the top changewheel shaft. In the event of replacement being necessary a 4 mm (5/32") diameter x 20 mm (3/4") long mild steel pin should be fitted as follows:-

Remove the hexagon nut, washer and changewheel, pull off the splined sleeve and remove the broken pin parts from both sleeves and shaft. Fit new pin.

NOTE: The pin acts in single shear and will only enter the sleeve from the 'big-hole' side.

## **Brake Adjustments (Fig.2 and 3)**

Adjustment for wear on the brake pad (which is mounted on the headstock pulley) is made at the pivot connection between the foot brake pedal and the vertical link rod. This is readily accessible from the rear of the machine where adjustment is made by turning the two locknuts on the link rod. A limit switch is mounted on the cabinet higher up the link rod and a slight re-positioning of the contact block may be necessary after adjustment for brake pad wear.

NOTE: The function of the limit switch is to cut-out the motor drive when the brake pedal is operated, i.e. the plunger should be depressed when the brake pedal is in its free position and released at the moment the brake pedal is operated.

## **Drive Belts (Fig. 4 and 5)**

Access to the vee belts is gained by removal of the rear splash guard (when fitted) and the sheet metal drive covers.

The drive motor is bolted to a slotted mounting plate which is vertically adjustable on the rear face of the bed. This is clamped by three hexagon head screws. Belt tension adjustment is achieved by adjusting the two vertical screws against the top edge of the mounting plate.

It is important that when making adjustments a straight edge be placed across the face of each pulley to ensure that correct alignment is maintained.

## **Saddle Strips (Fig. 6 and 7)**

Wear on the rear and front saddle strips may be accommodated by adjustment of the retaining sleeves located in the top face of the saddle; two for the rear and one each for the two front strips.

The procedure for adjustment is to first release the socket head screw, slightly turn the slotted head sleeve anti-clockwise and then re-clamp the cap screw. Care should be taken to avoid over adjustment; a 30° turn at the sleeve represents approximately 0.1 mm (.004") take up in the strip.

## **Tailstock Bed Clamp (Fig. 8)**

The angular lock position of the bed clamp lever is adjusted by means of the self-locking hexagon headed bolt located on the underside of the tailstock and between the bed ways.

continued

### **Cross-slide** (Fig. 9)

Wear on the taper-gib strip may be adjusted for by clockwise rotation of the slotted head screw on the front face of the cross-slide. The procedure being to first slacken the similar screw at the rear then re-tighten this after adjustment to clamp the strip in its new position.

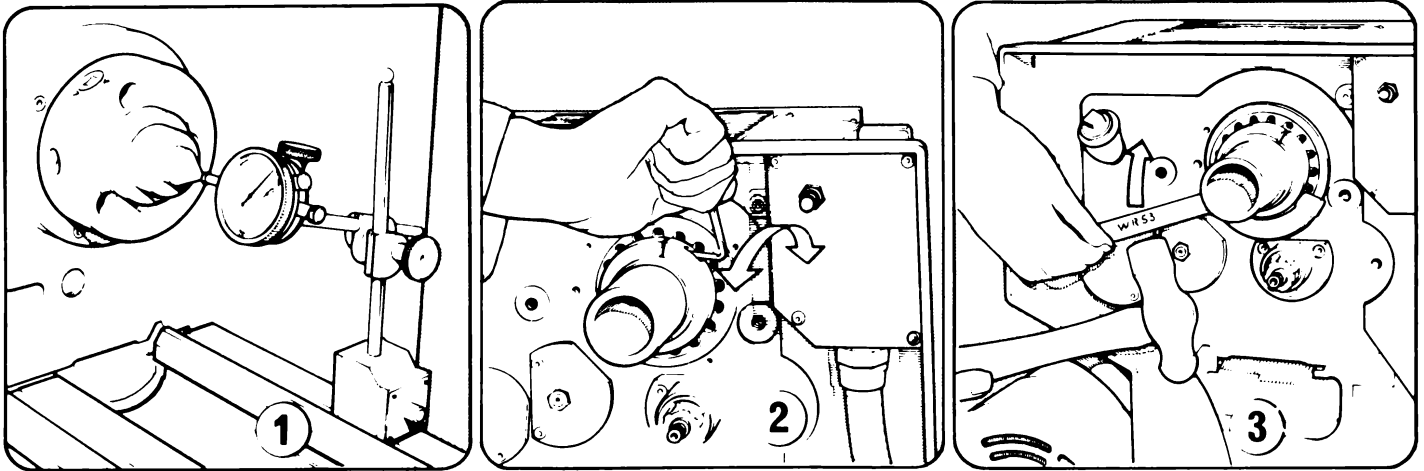
### **Top Slide** (Fig. 10)

Take up for wear on the top slide strip is by means of the four (self-locking) socket set screws in the front face of the top slide casting.

### **Cross-slide Nut** (Fig. 11 and 12)

Provision is made for the elimination of backlash in the cross-slide nut, the procedure for adjustment being as follows: -

Slightly release, only the rear pair of socket cap head screws in the top face of the cross-slide, turn the centre socket set screw in a clockwise direction as required then re-clamp the two rear cap screws. Care should be taken to avoid over adjustment; a 120° turn at the centre screw represents approximately 0.1 mm (.004") take up of backlash.



The spindle bearing assembly is carefully set before despatch of the Lathe from our Works which should ensure a high standard of performance without the need for further attention.

THE USER IS ADVISED NOT TO DISTURB THIS SETTING DURING NORMAL USE OF THE MACHINE AND TO CONSULT OUR SERVICE DEPARTMENT IN THE UNLIKELY EVENT OF A BEARING PROBLEM.

WHERE ADJUSTMENT IS UNDERTAKEN THEN IT IS ESSENTIAL THAT THE FOLLOWING PROCEDURES ARE STRICTLY COMPLIED WITH.

#### 'A' TO CHECK FOR CORRECT SETTING

Set up a dial test indicator having 0.0025 mm (0.0001") divisions with the stylus registered on the nose-end of the headstock spindle. Preferably, locate the stylus centrally on a flat-nosed centre placed in the spindle bore. Fig. 1.

Take off the end drive cover and ROTATE THE SPINDLE by hand from the back of the headstock whilst pulling and pushing so that any end-float present can be read off the test indicator dial.

The correct setting of the bearings, with the headstock cold is when the end-float condition does not exceed two ten-thousandths of an inch (0.0002" or 0.0050 mm) whilst THE SPINDLE REMAINS FREE TO BE TURNED BY HAND.

#### 'B' TO RESTORE THE LIMITED END-FLOAT CONDITION:-

Remove changewheels, swing frame and rear bearing cover. Release the locking screw of the screwed adjusting collar Fig. 2 and push the spindle forward whilst rotating it in the hand to ensure that the bearing rollers are registering correctly on the inner ring thrust faces.

Whilst keeping watch on the indicator dial, tighten the bearing adjusting collar using the special spanner provided Fig. 3 until the excessive end-float is taken up. Now ascertain the end-float by pushing and pulling upon the spindle and make any necessary slight adjustment required to provide the correct setting (0.0002" or 0.0050 mm).

Tighten the locking screw of the adjusting collar and REPEAT PROCEDURE 'A' to be sure that no inadvertent alteration of the setting has taken place.

Refit the rear bearing cover, swing frame, changewheels and end drive cover.

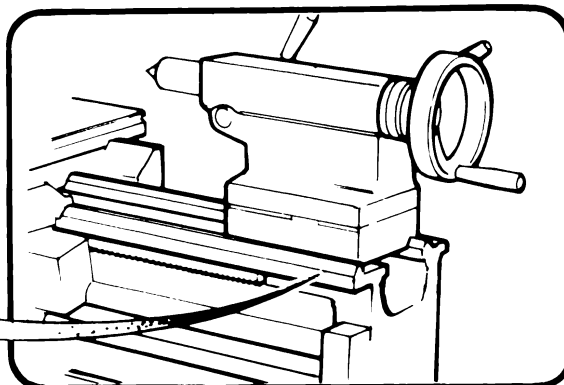


# Parts Ordering Procedure

1

## Quote: Machine Serial Number

which will be found stamped into the front face of the bedways at the tailstock end.



2

Refer to the appropriate assembly and

## Quote:

**Individual Part Numbers taken direct from the Illustrations**

NOTE: Quantity used (when other than one) is given in a circle following the Part Number itself.

Where part numbers change with machine bed length then the model number is given, vis.

630mm

or

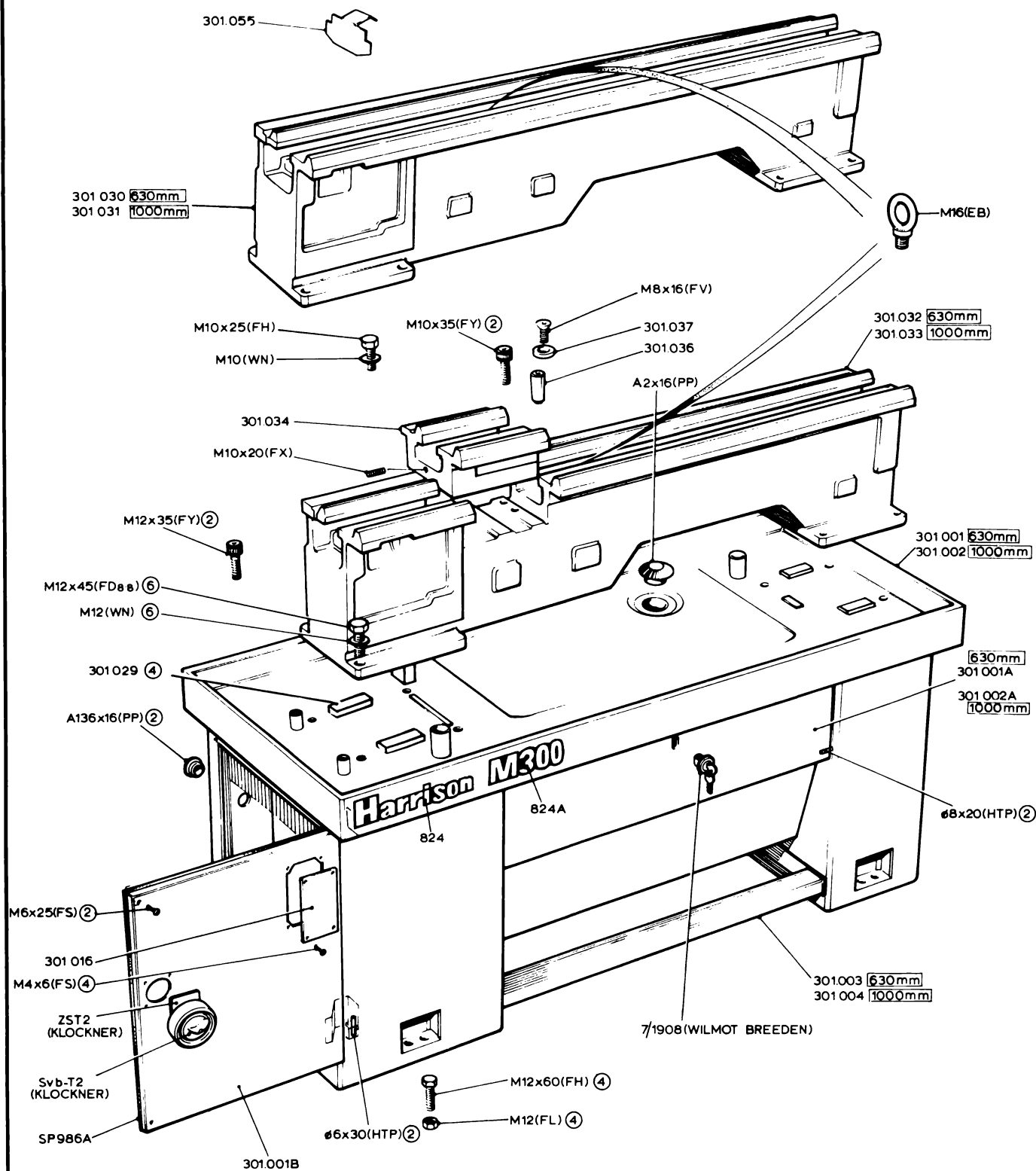
1000mm

Standard/Proprietary Parts (i.e. items which can be purchased from local Engineering suppliers) may be identified by the "bracketed" letter code included in the Part Number, and reference to the appendix at the end of this manual will provide a full description of such items.

**Parts Section**

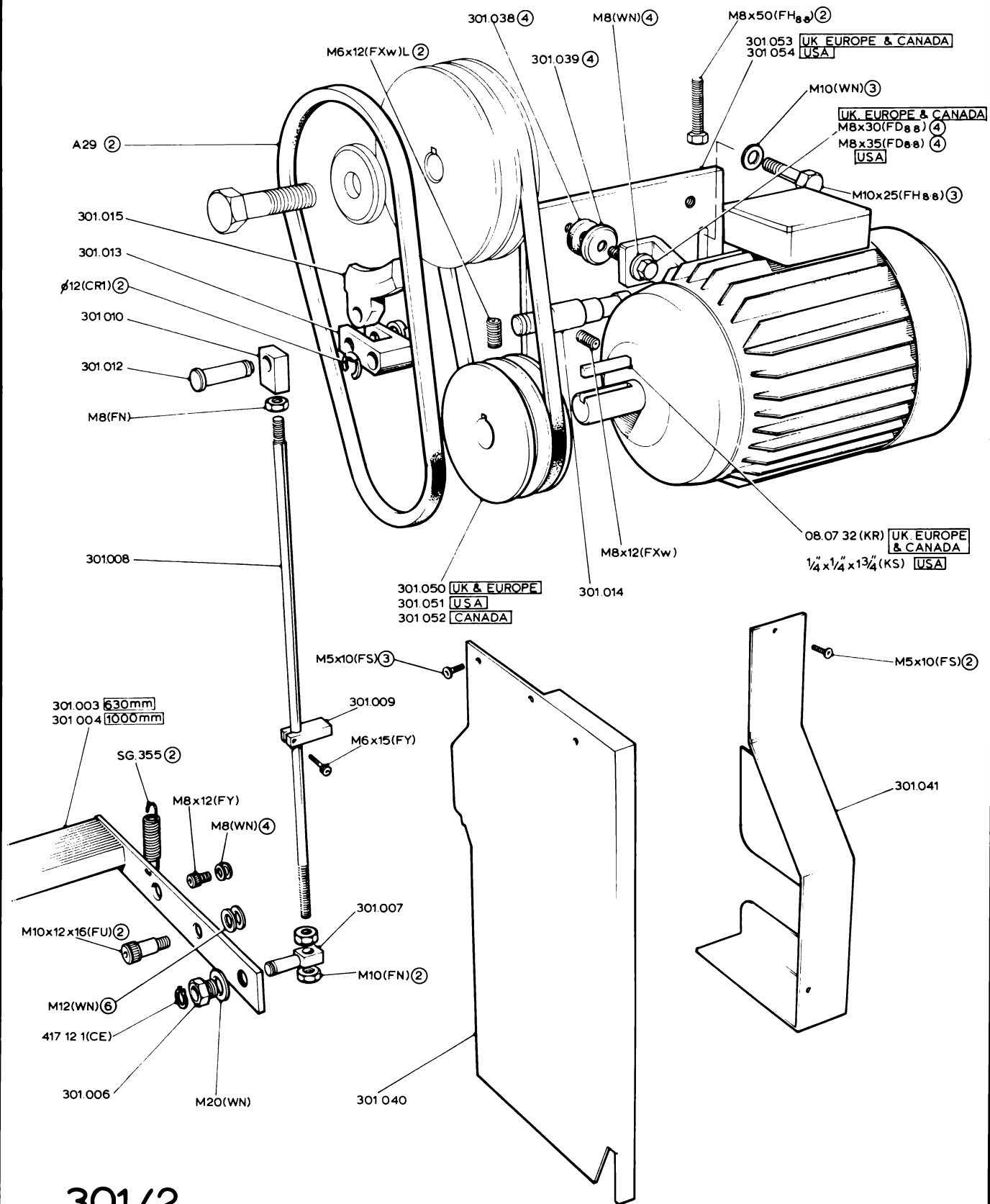
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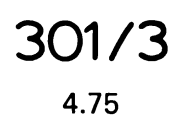
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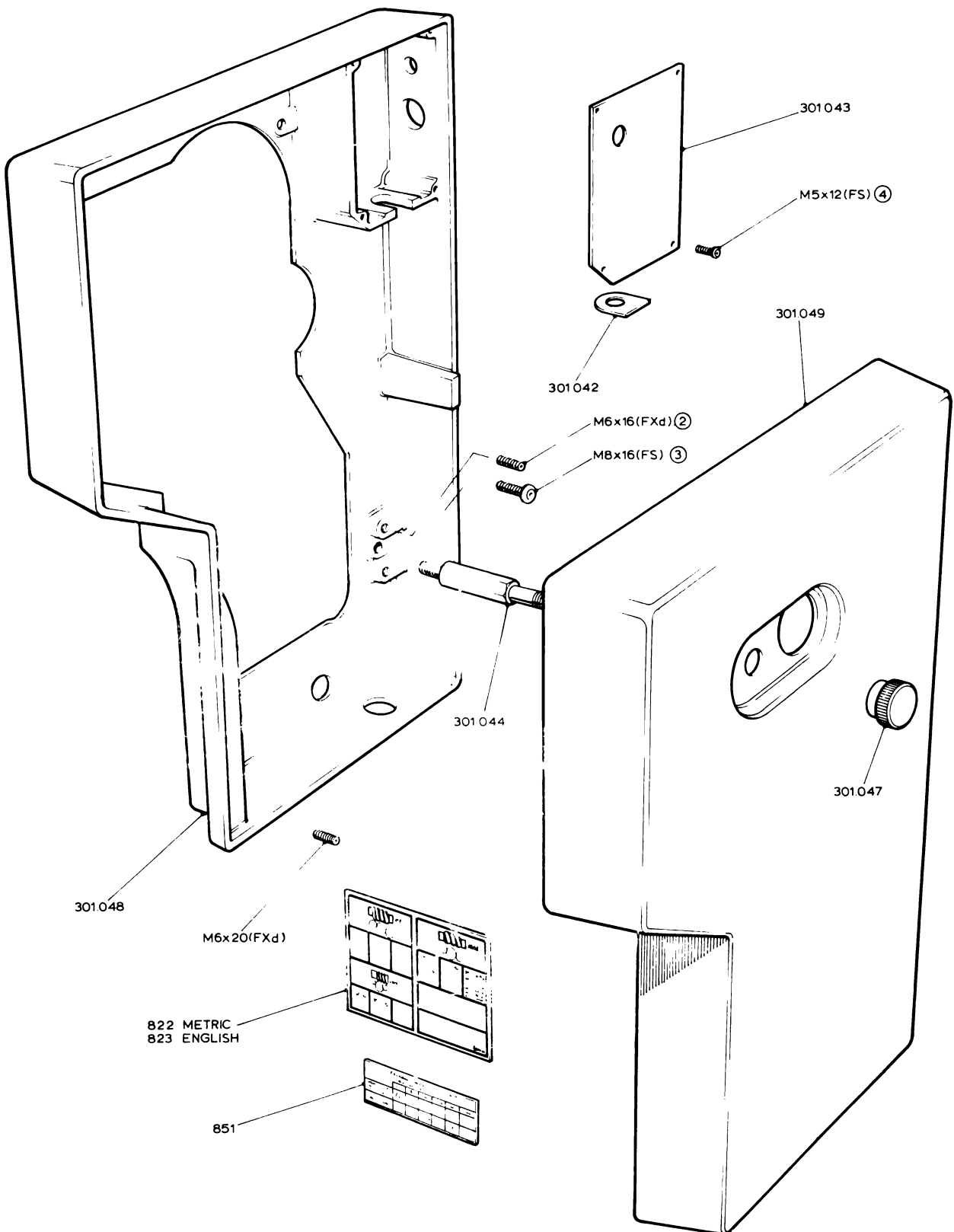
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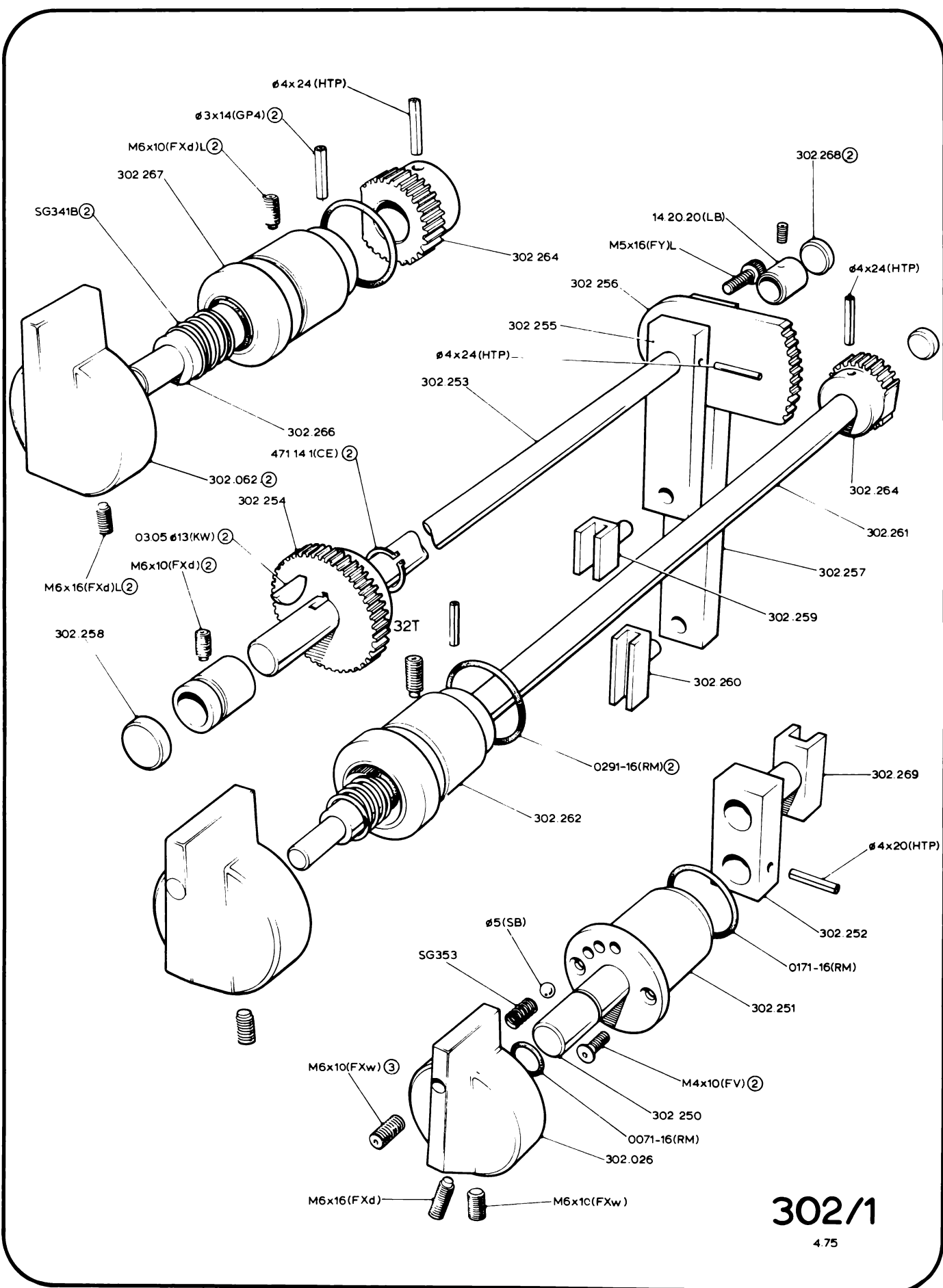
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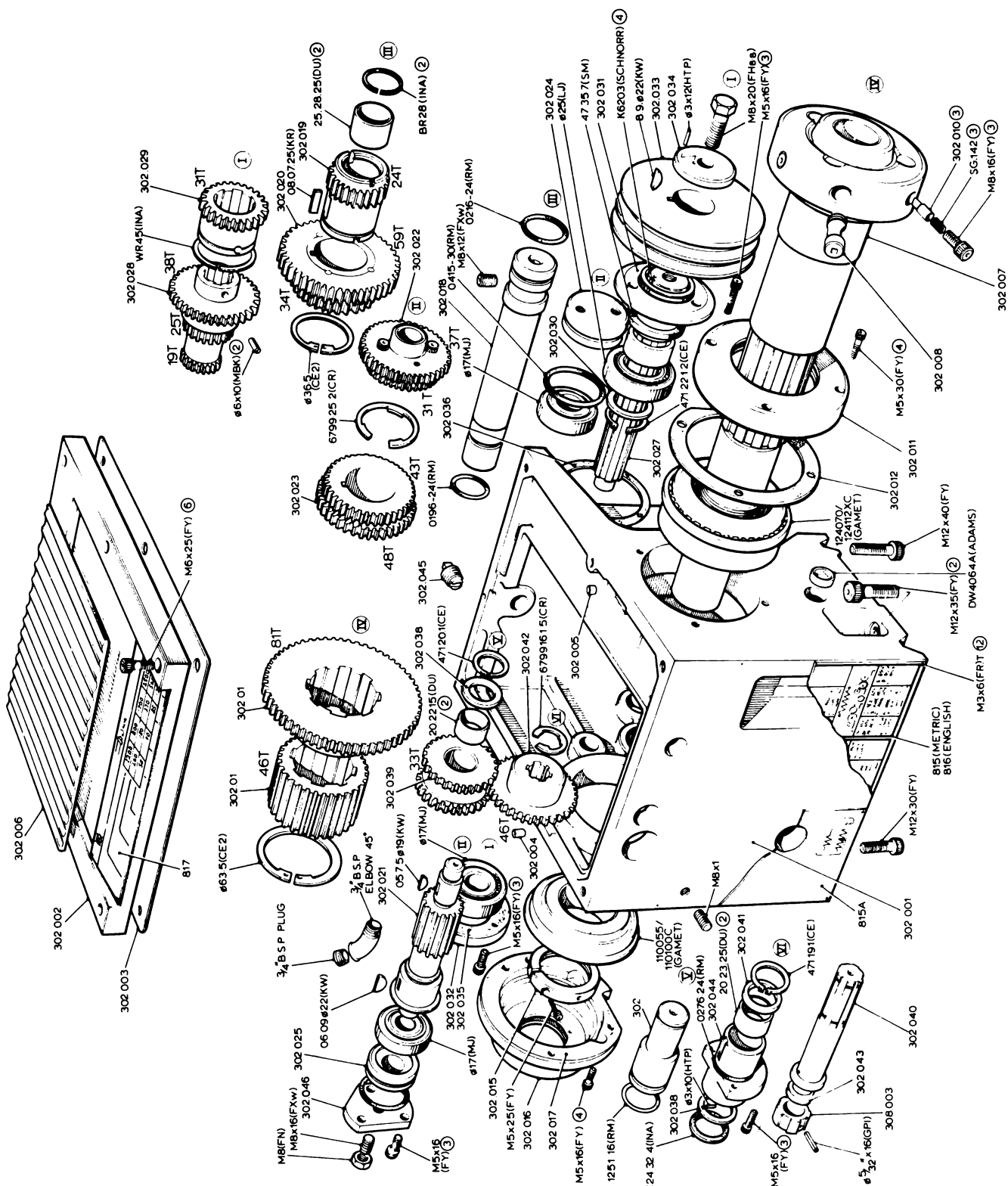




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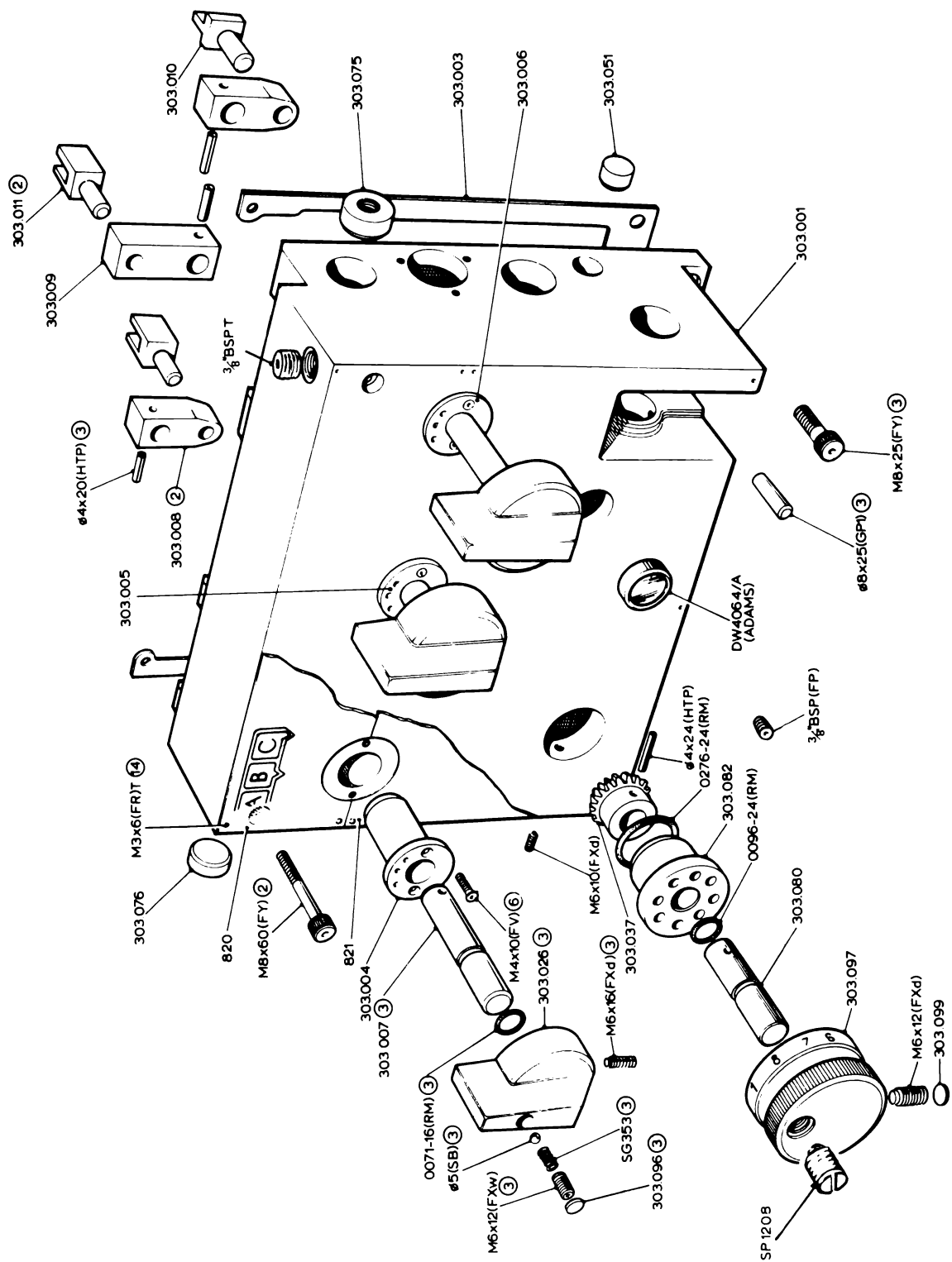
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302/2

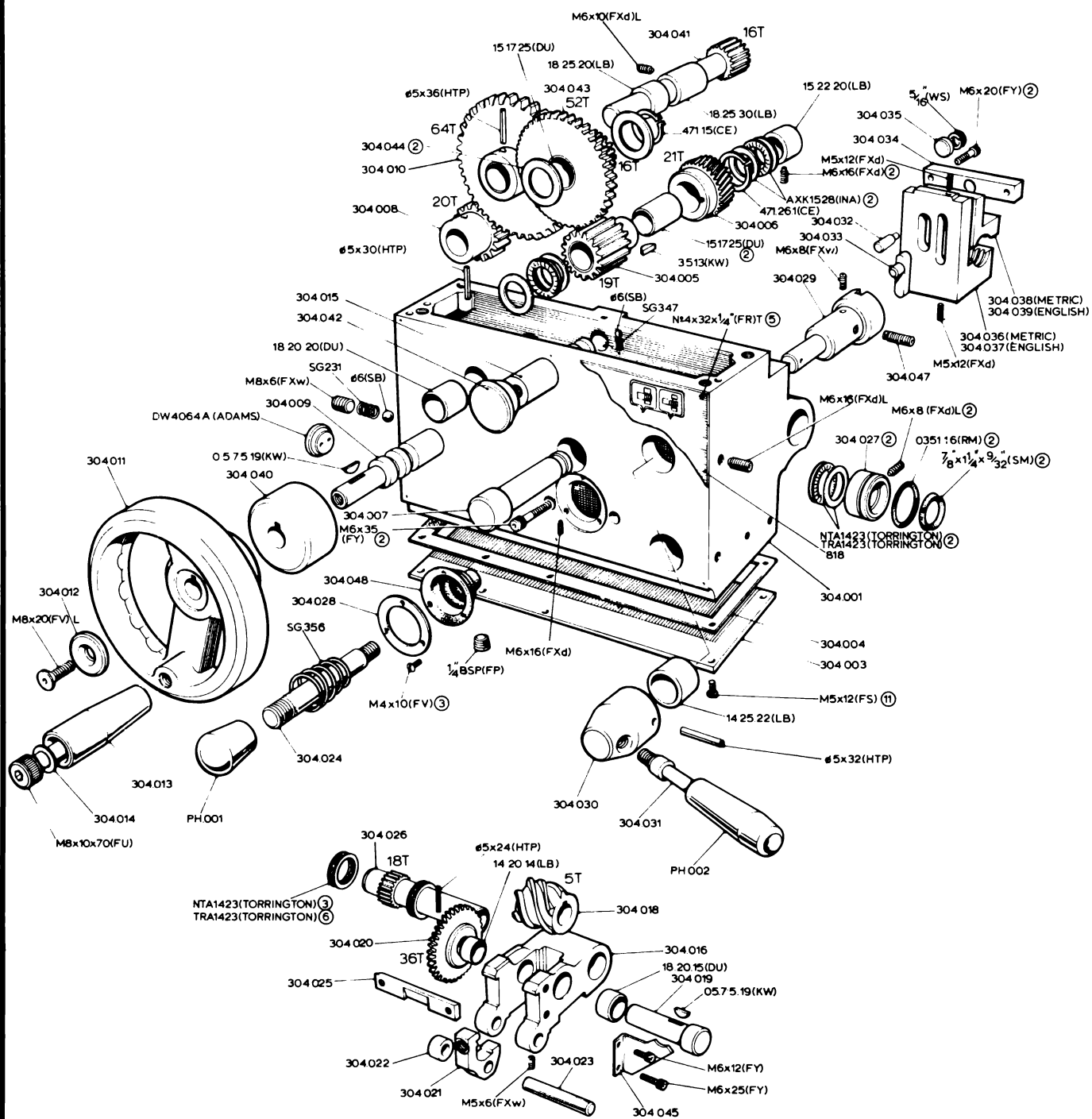
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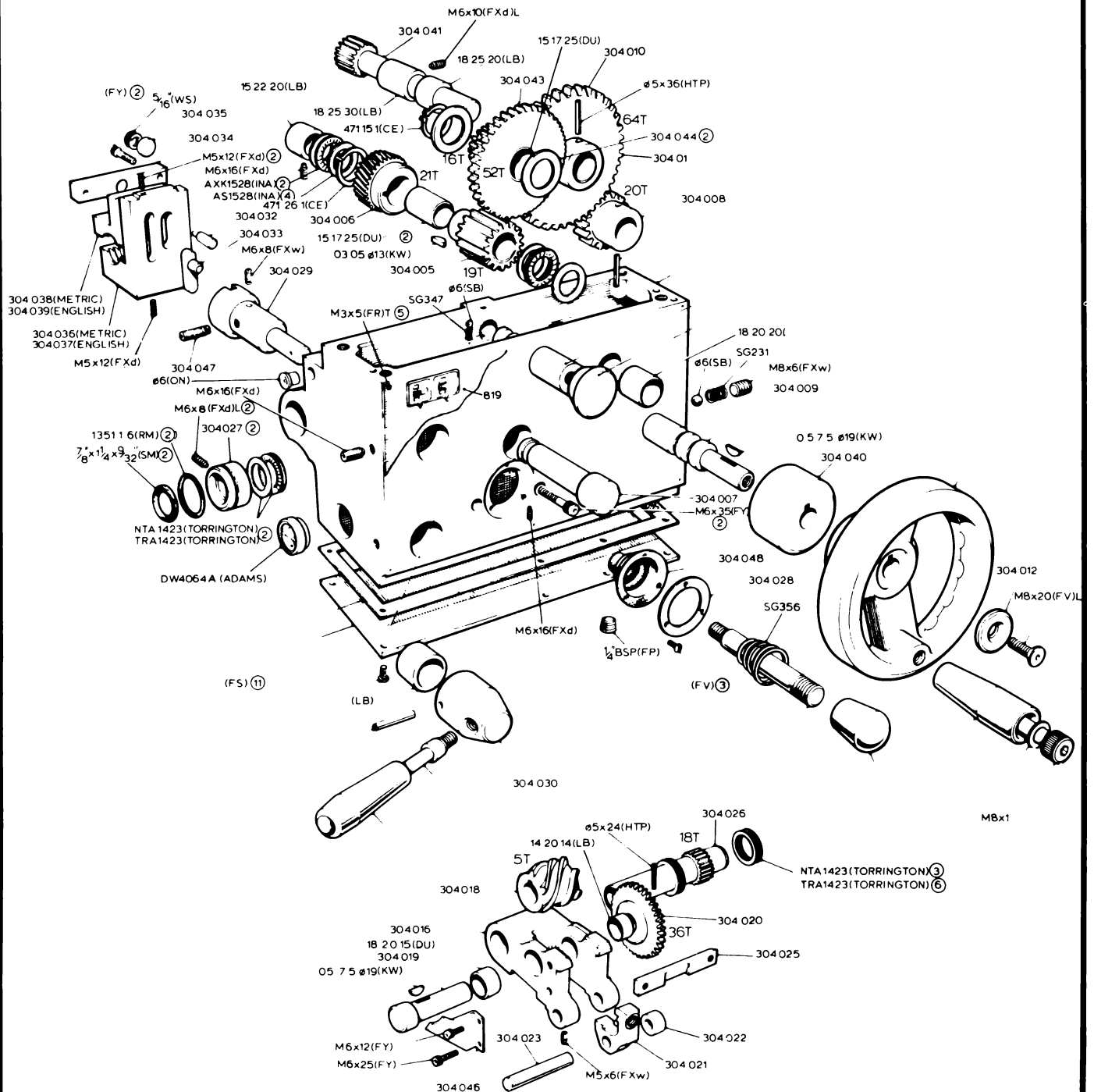
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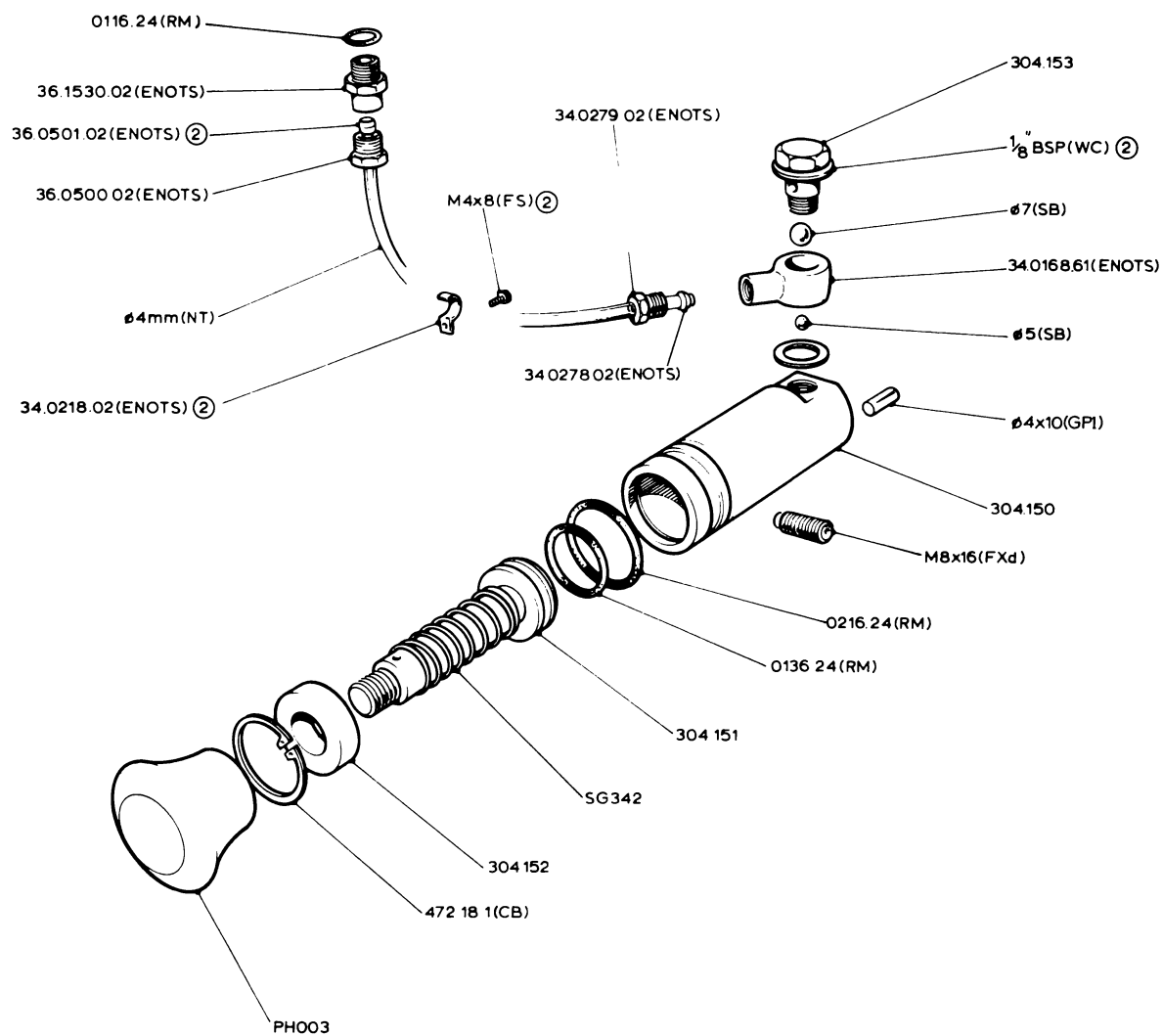


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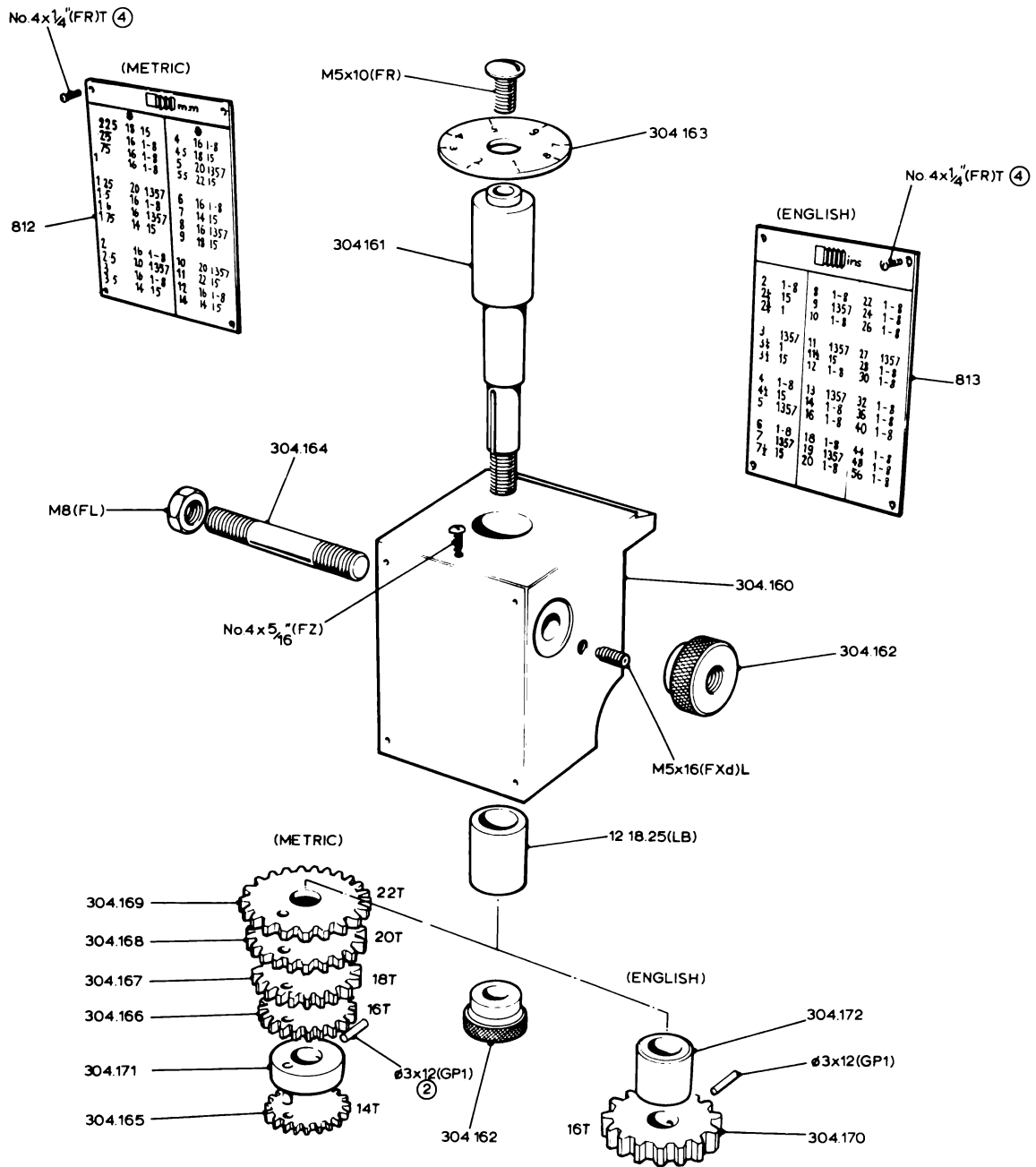


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475



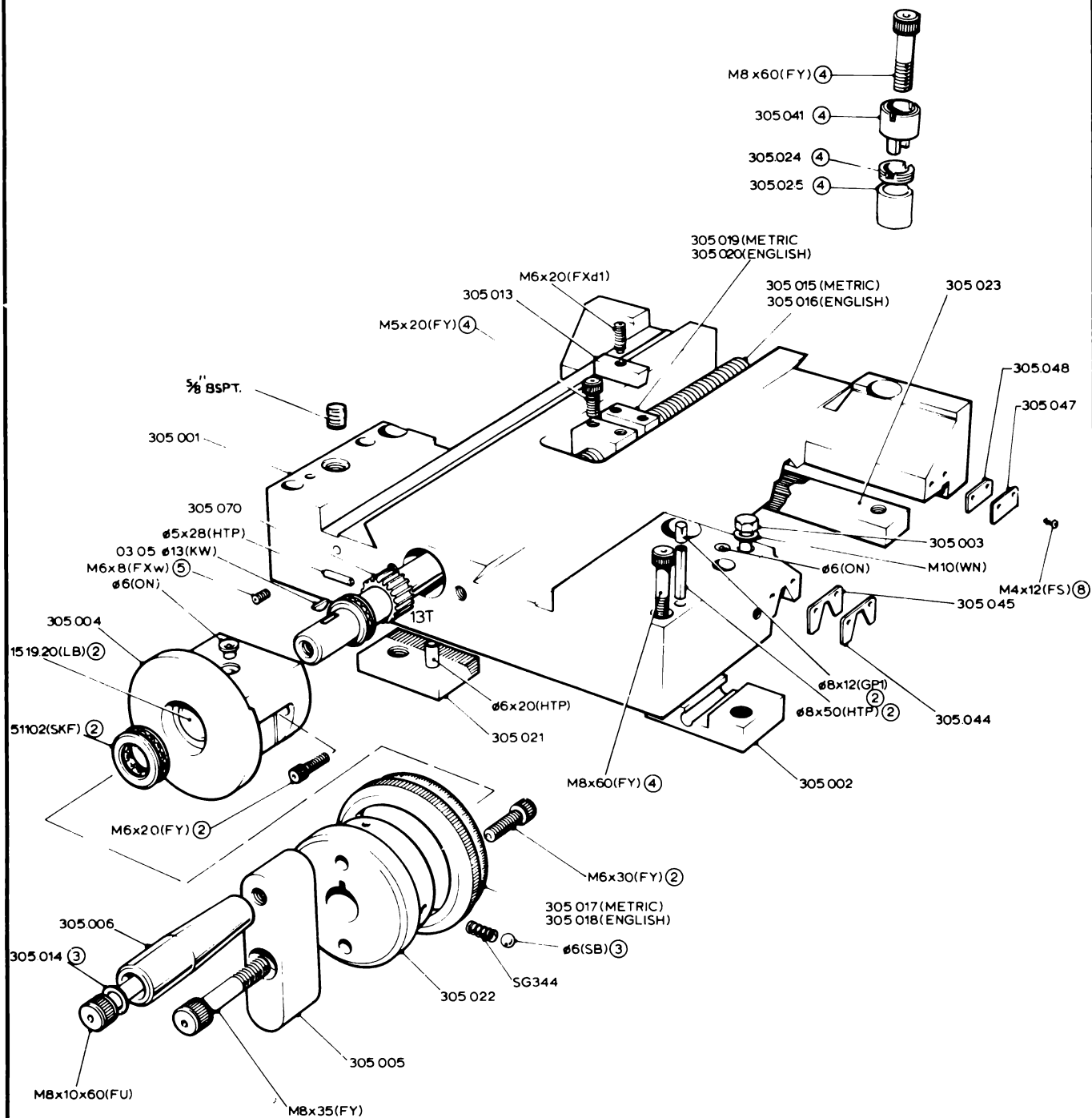
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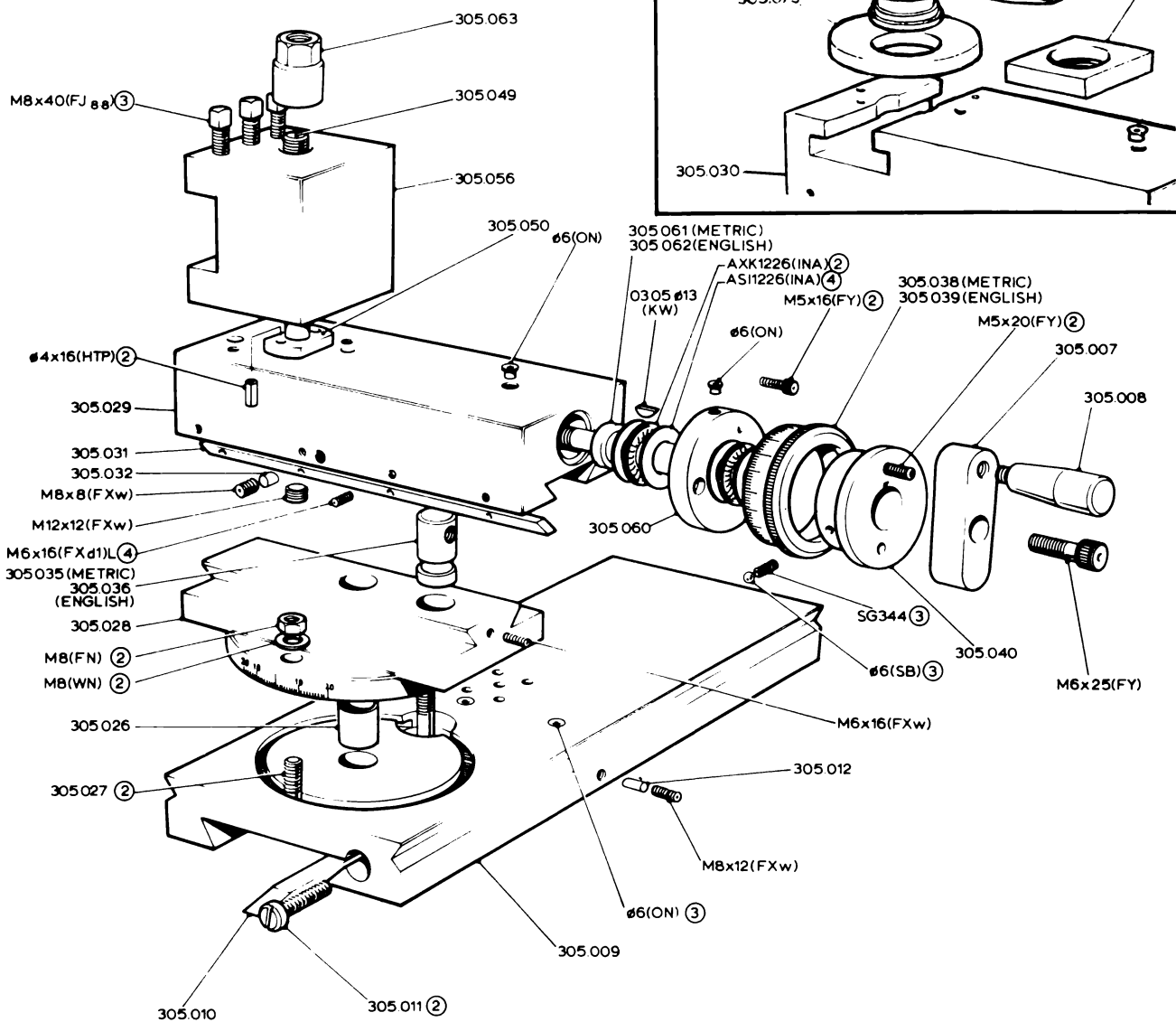
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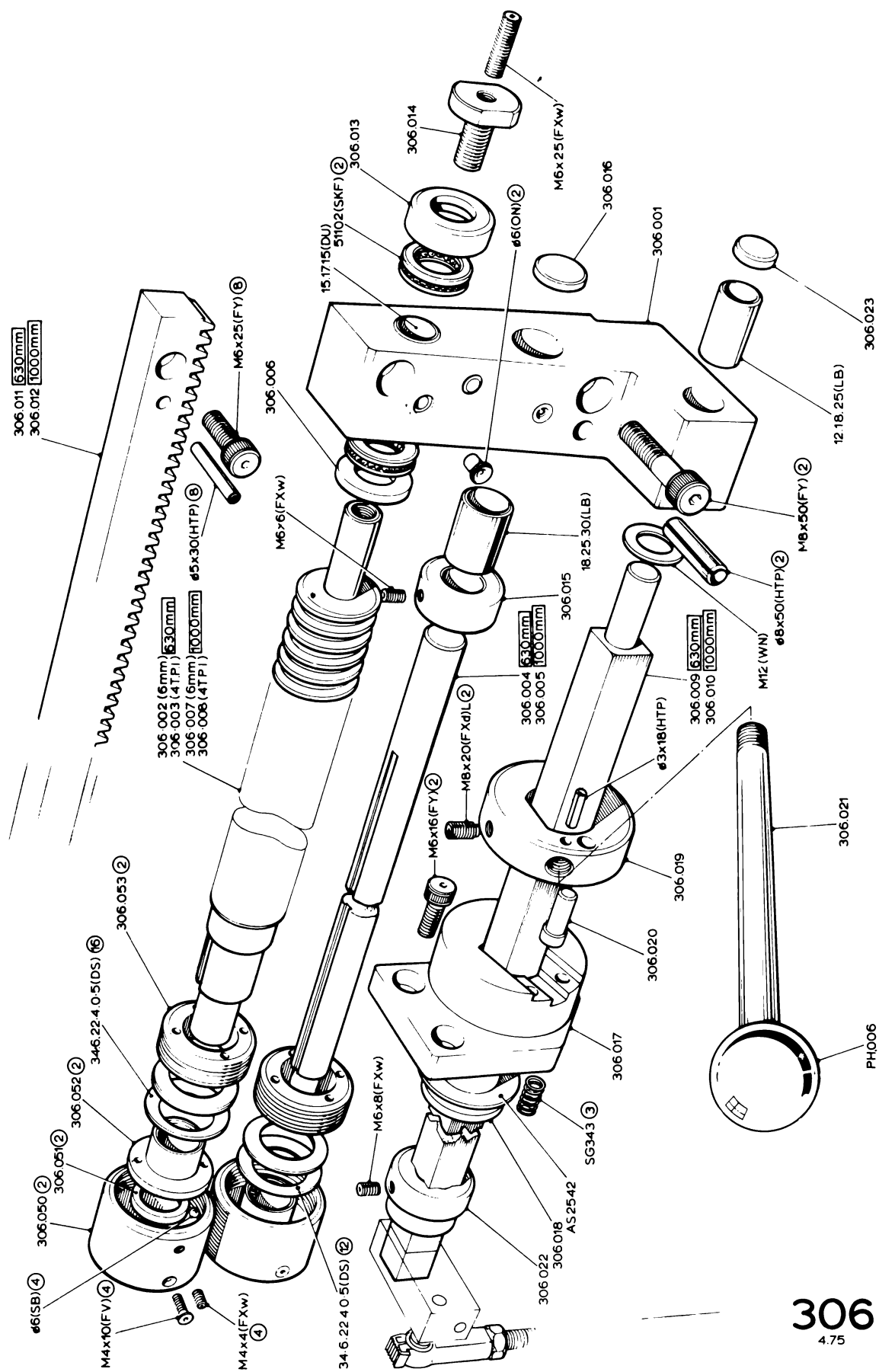
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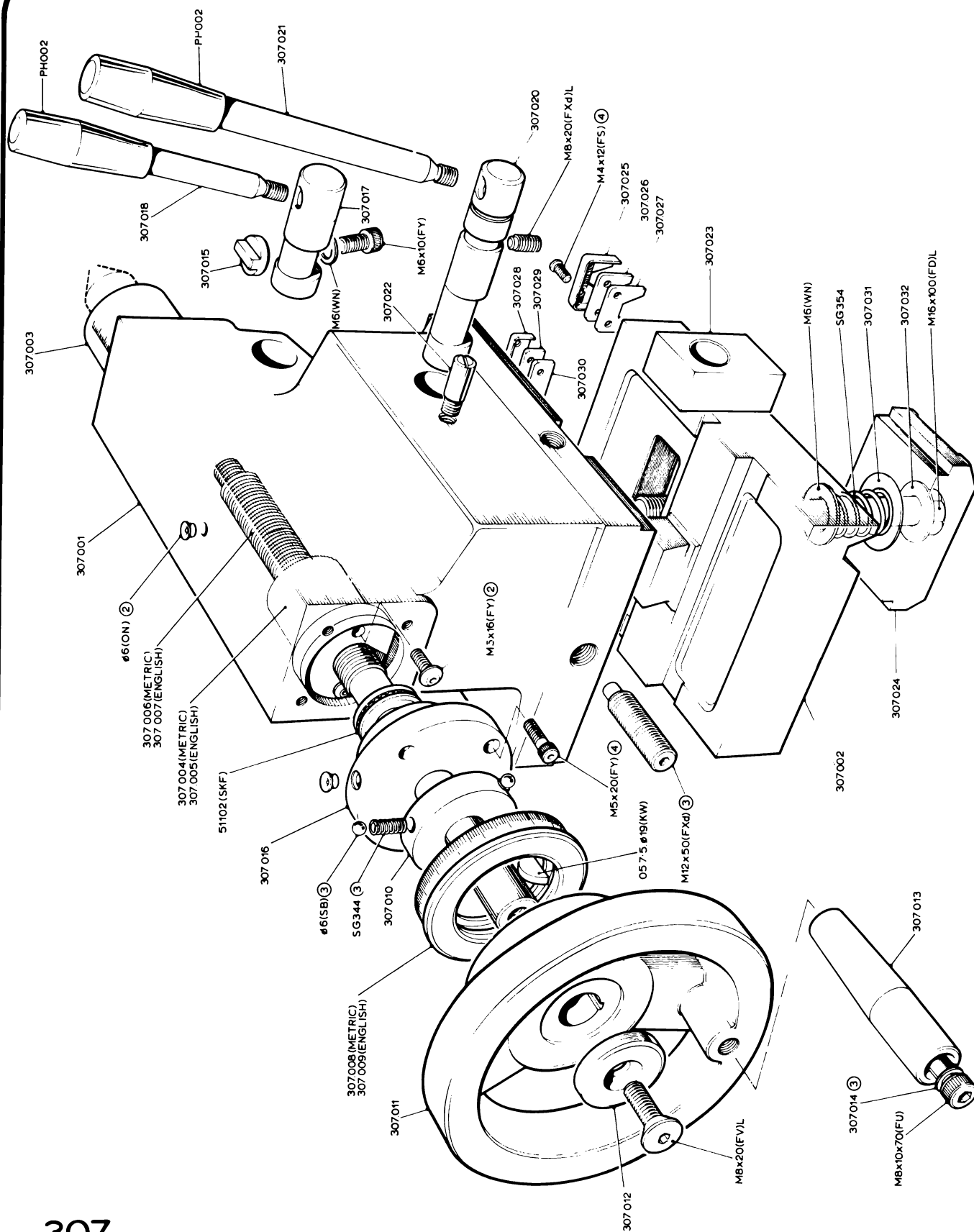
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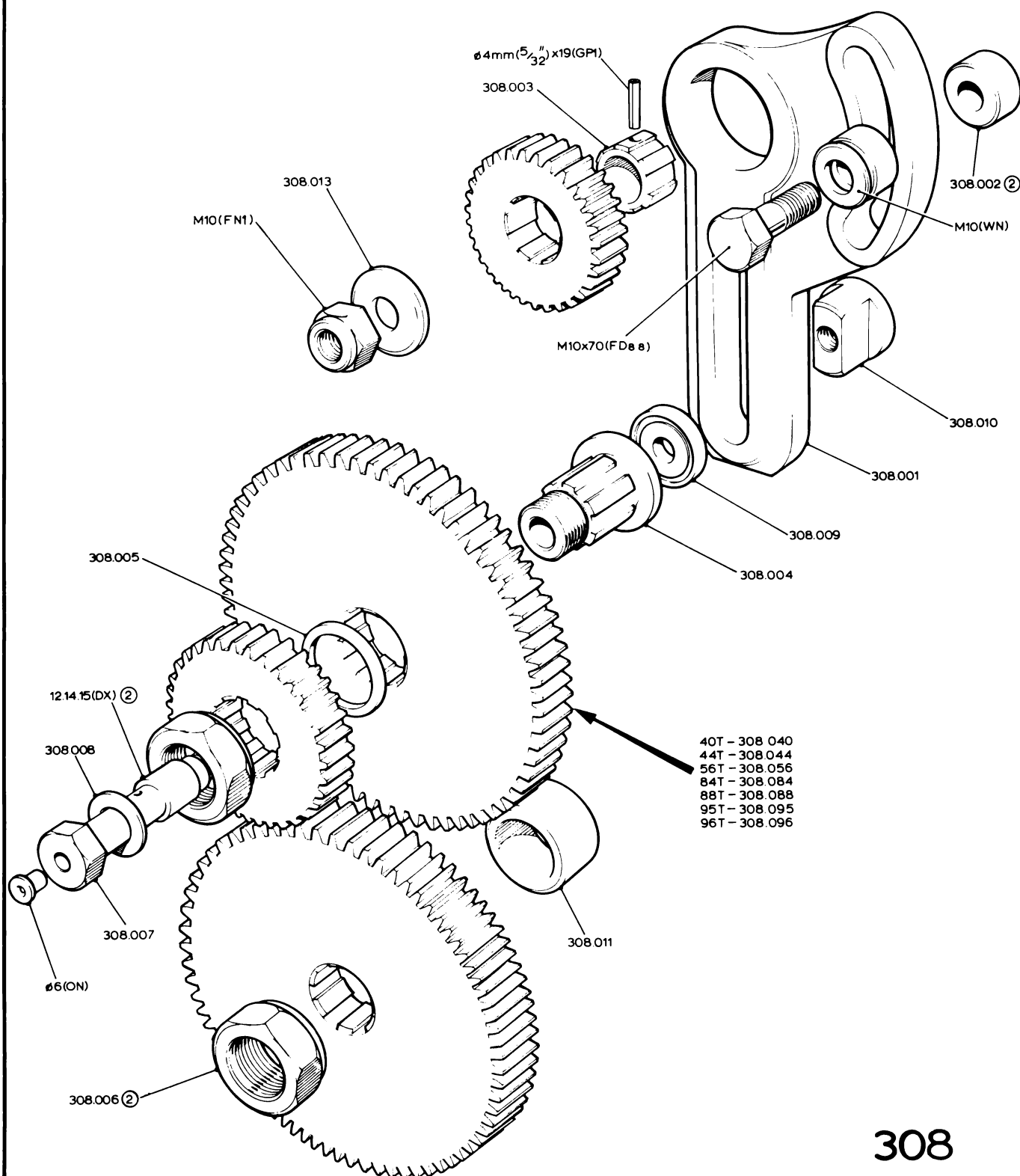
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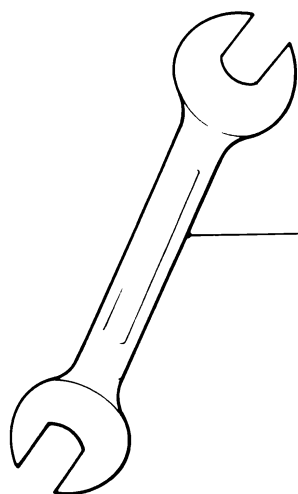
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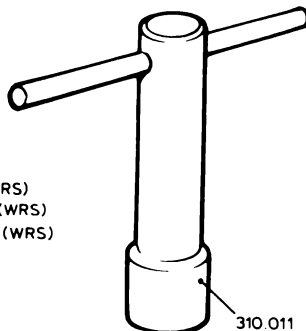


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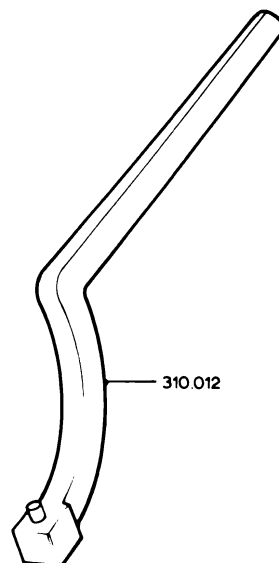
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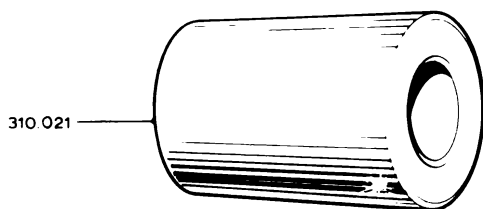
M8/13mm x 15mm (WRS)  
M10/17mm x M12/19mm (WRS)  
M14/22mm x M16/24mm (WRS)  
M18/27mm x M22/32mm (WRS)



310.011



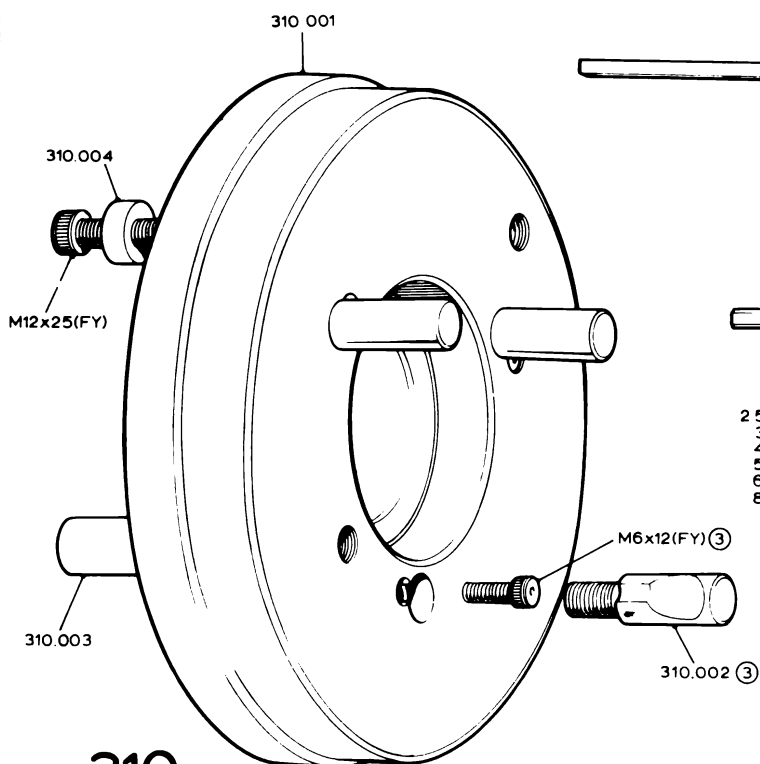
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310.021



310.020

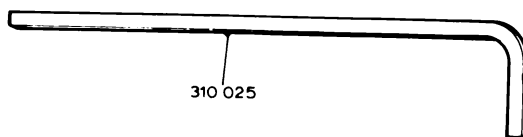


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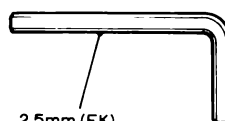
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M12x25(FY)

310.003



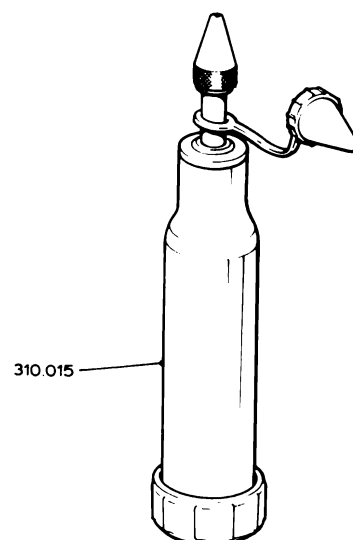
310.025



2 5mm (FK)  
3mm (FK)  
4mm (FK)  
5mm (FK)  
6mm (FK)  
8mm (FK)

M6x12(FY) ③

310.002 ③



310.015

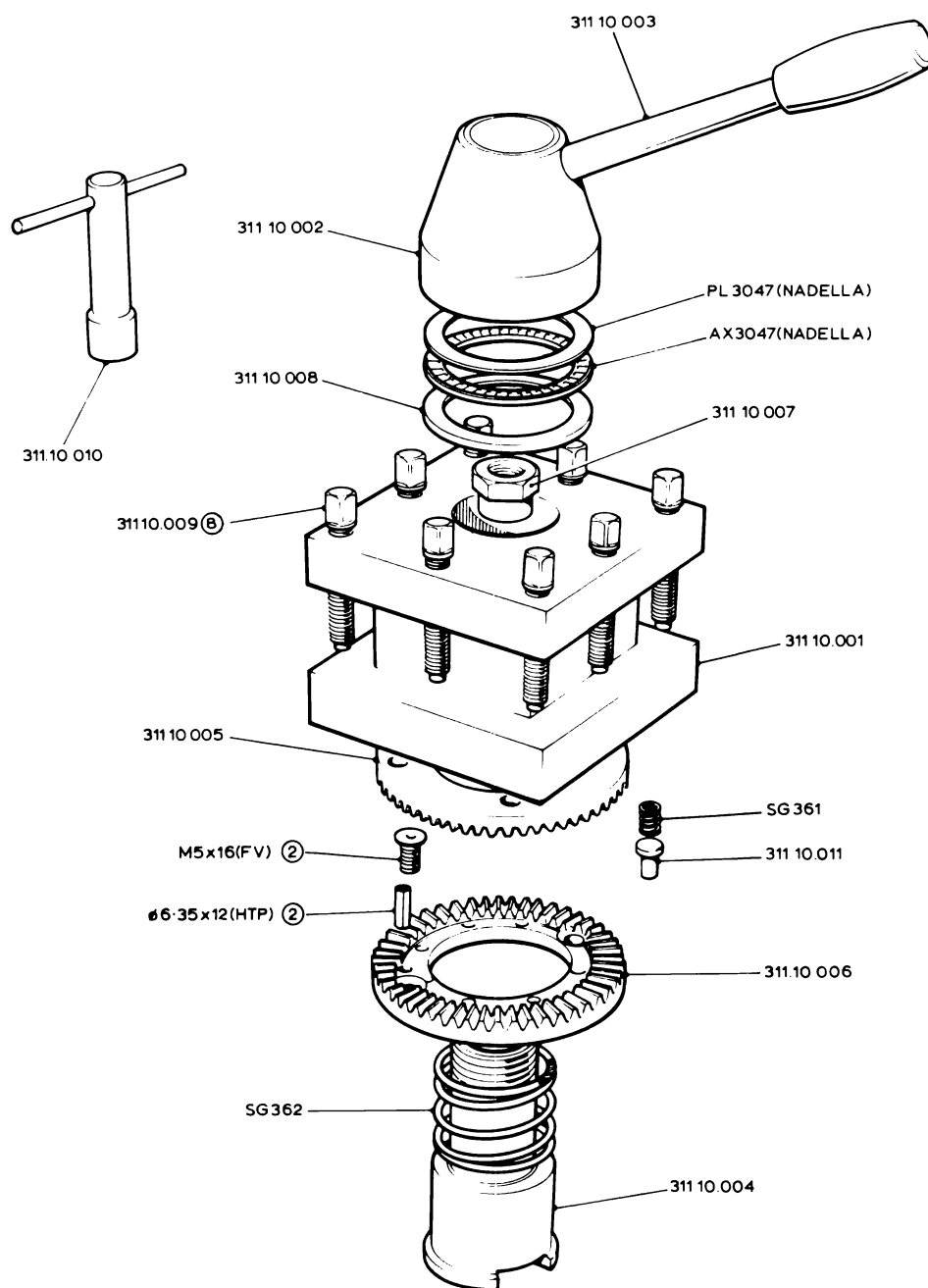
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4.75

## Additional Equipment

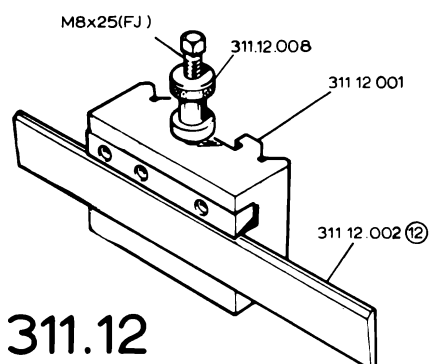
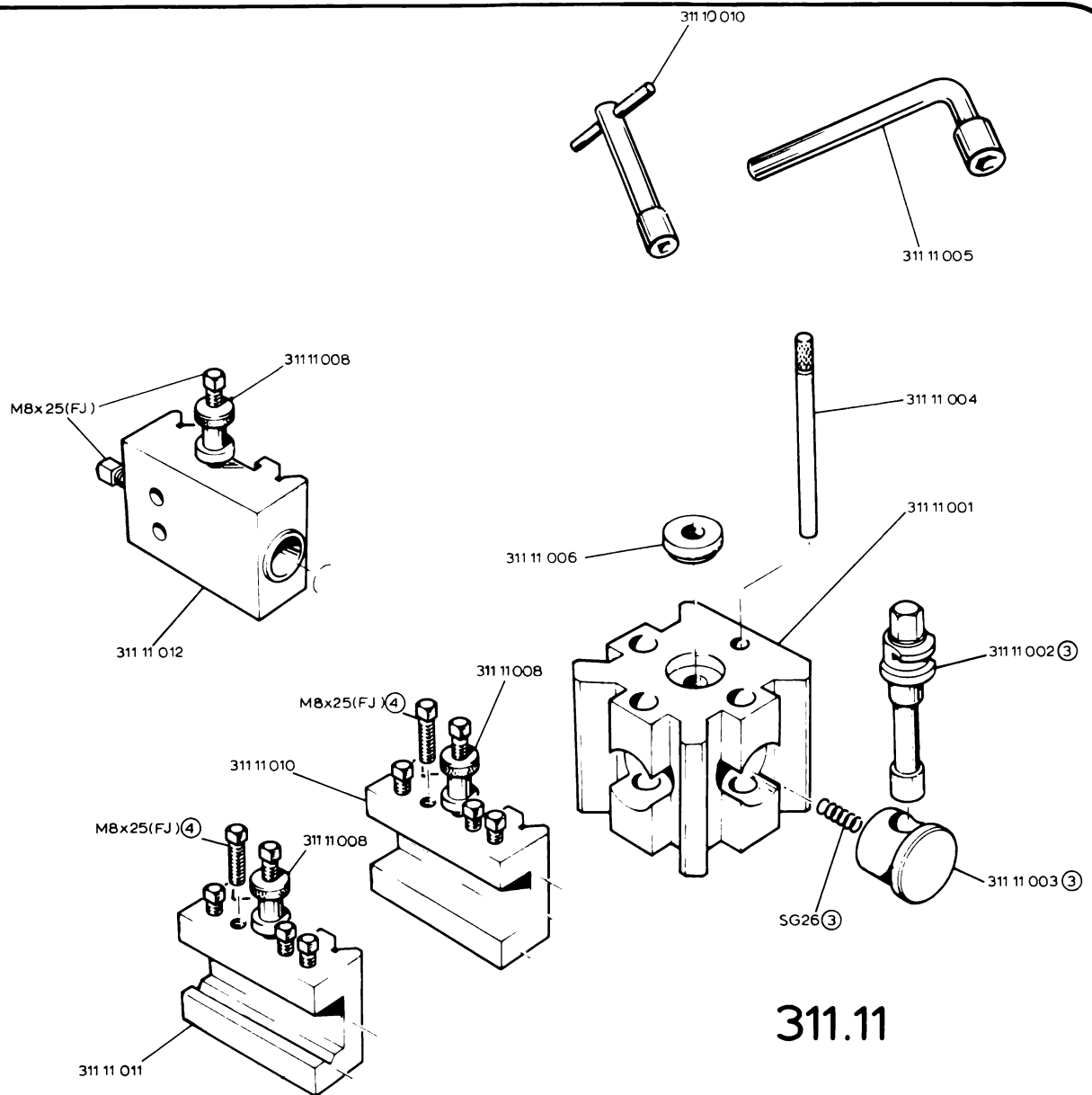
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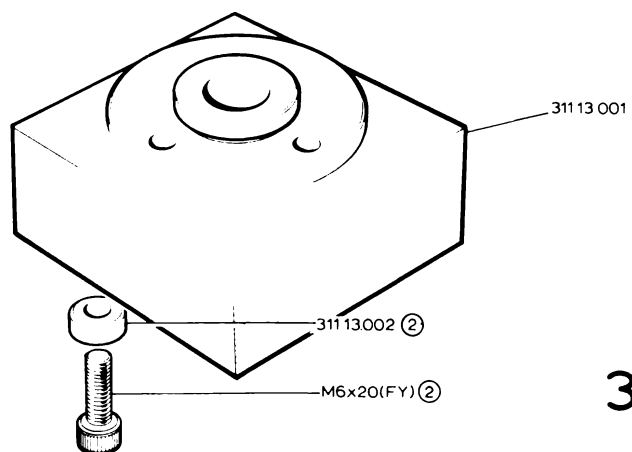
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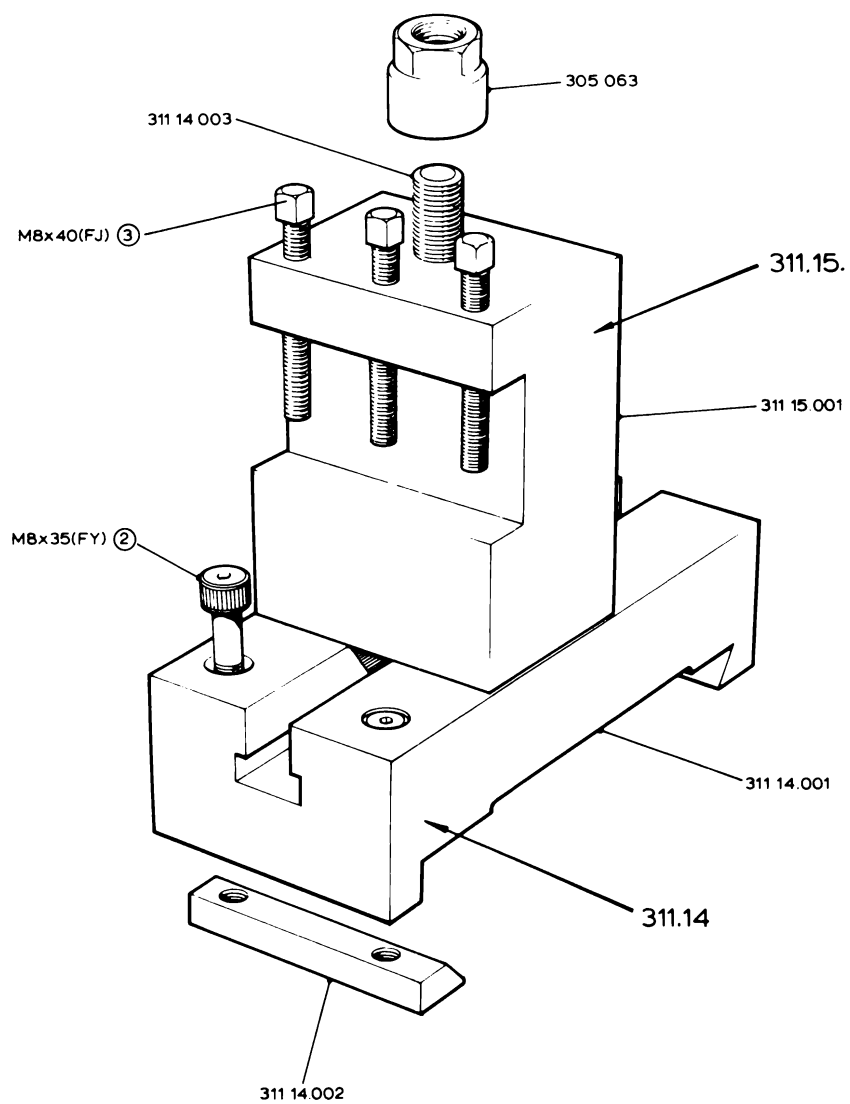
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311.11-12-13

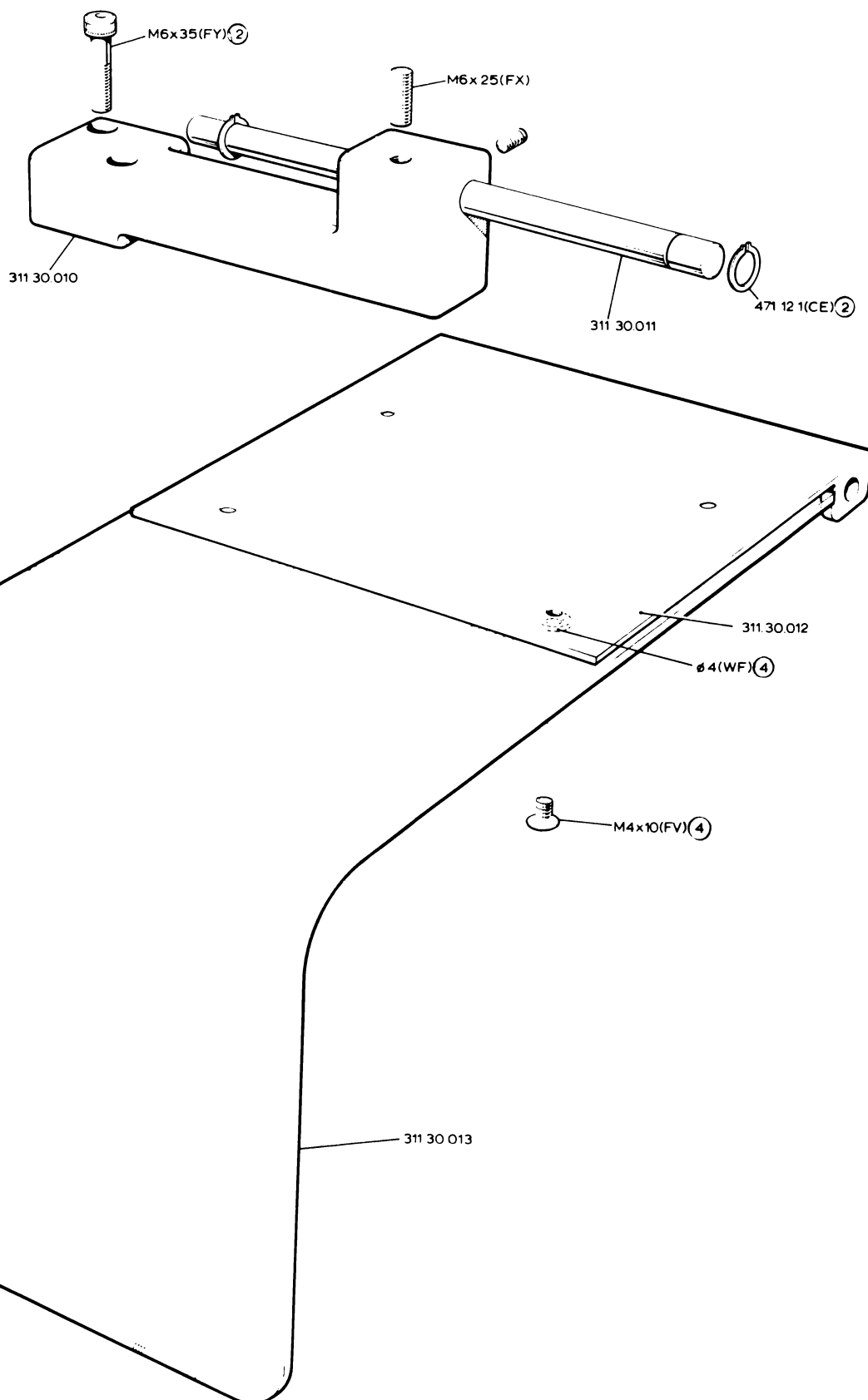
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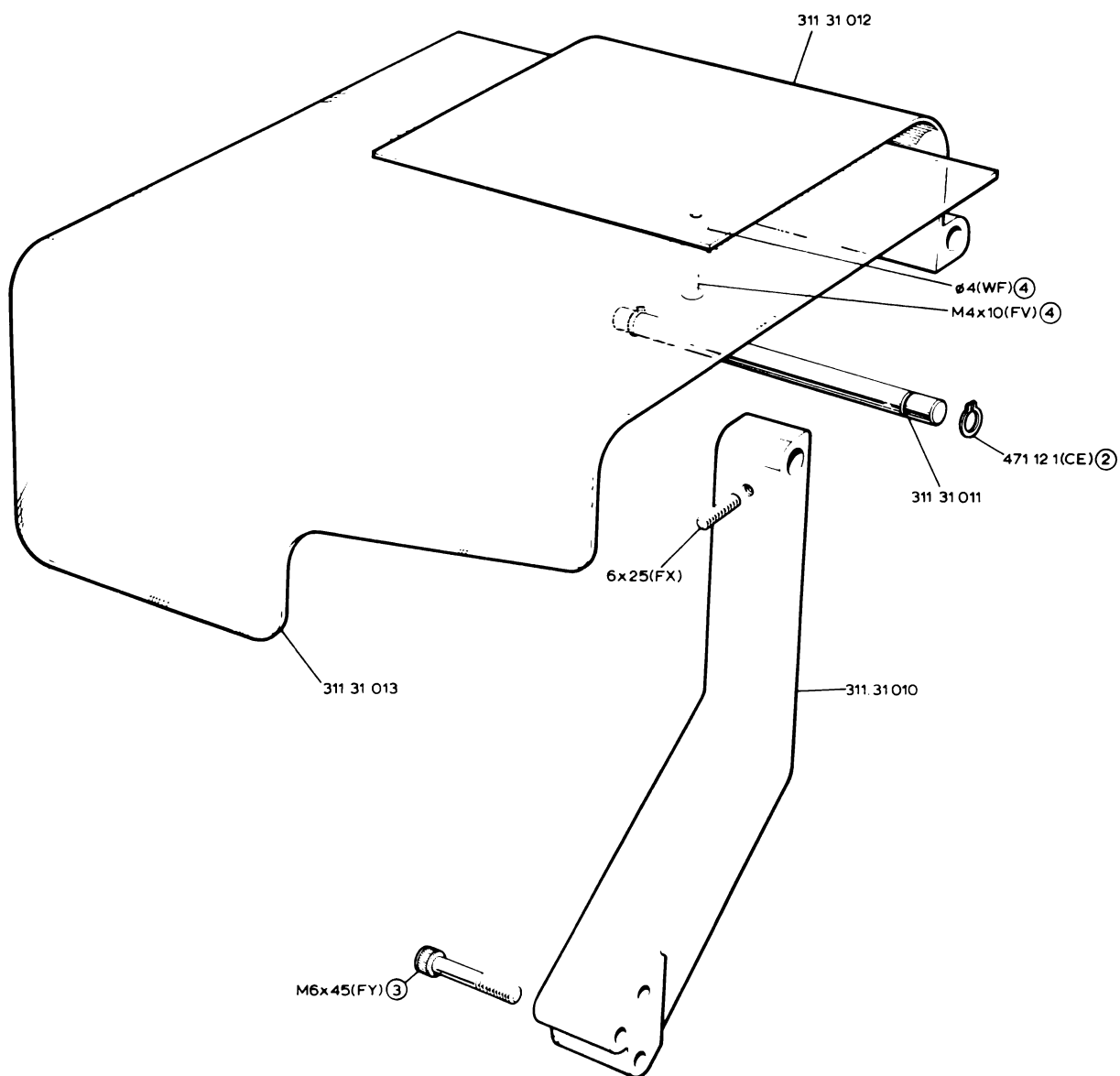
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311.30

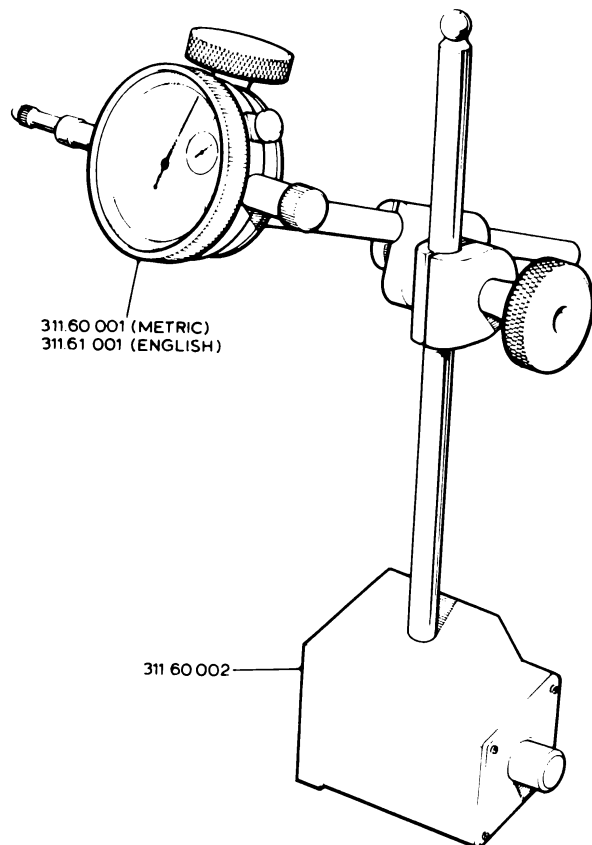
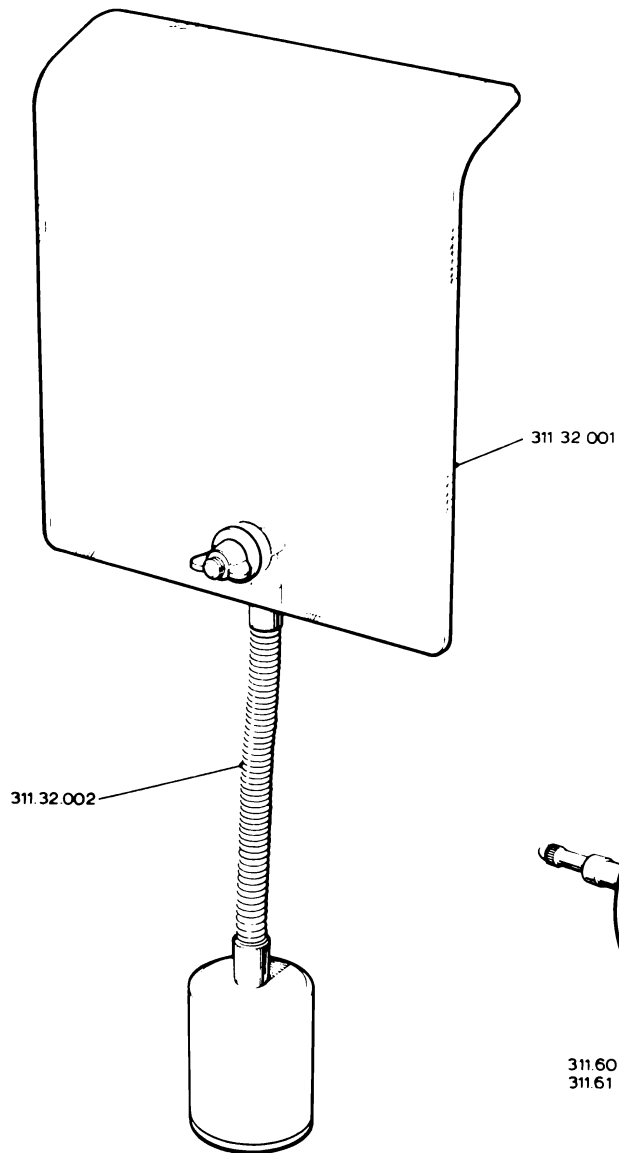
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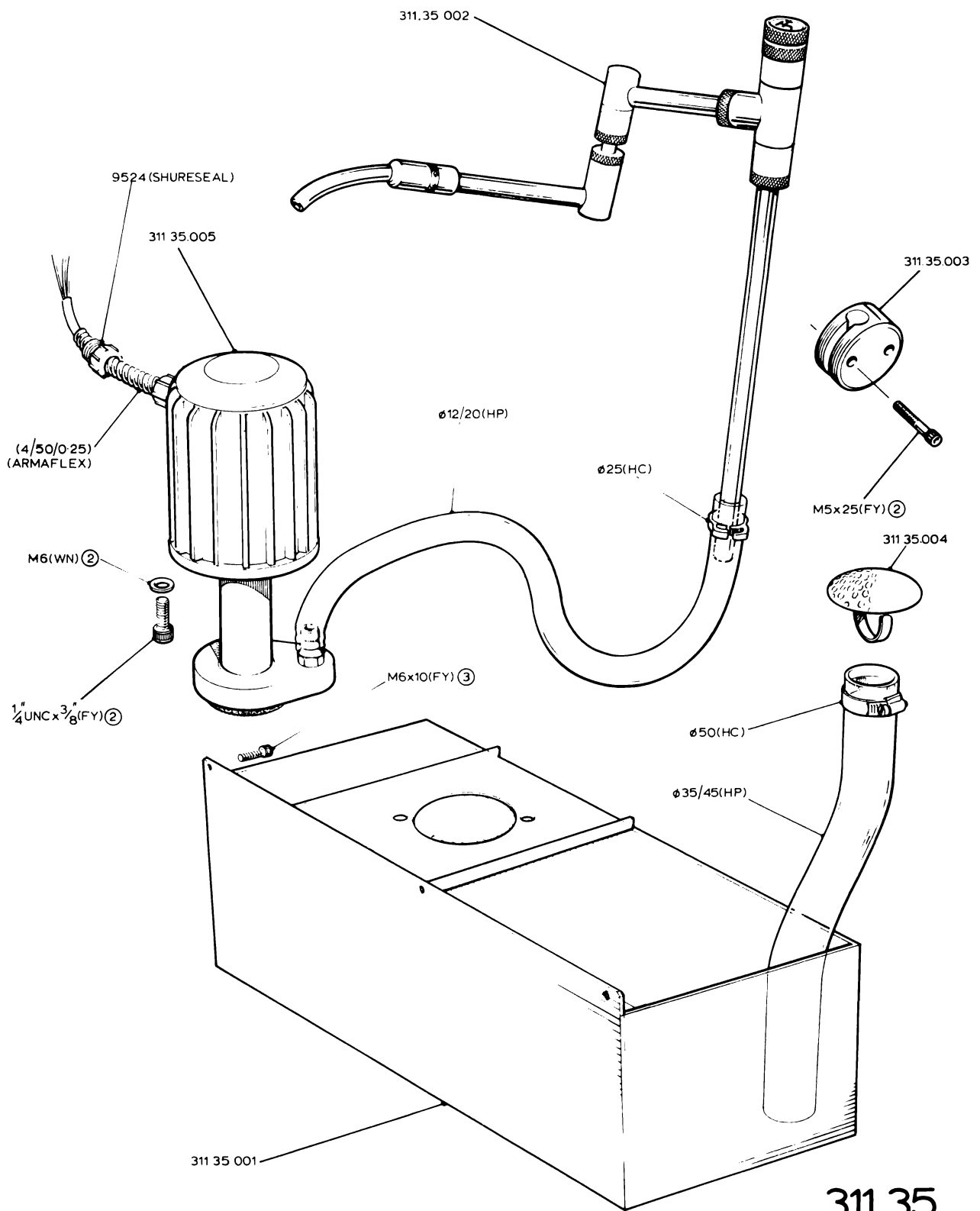
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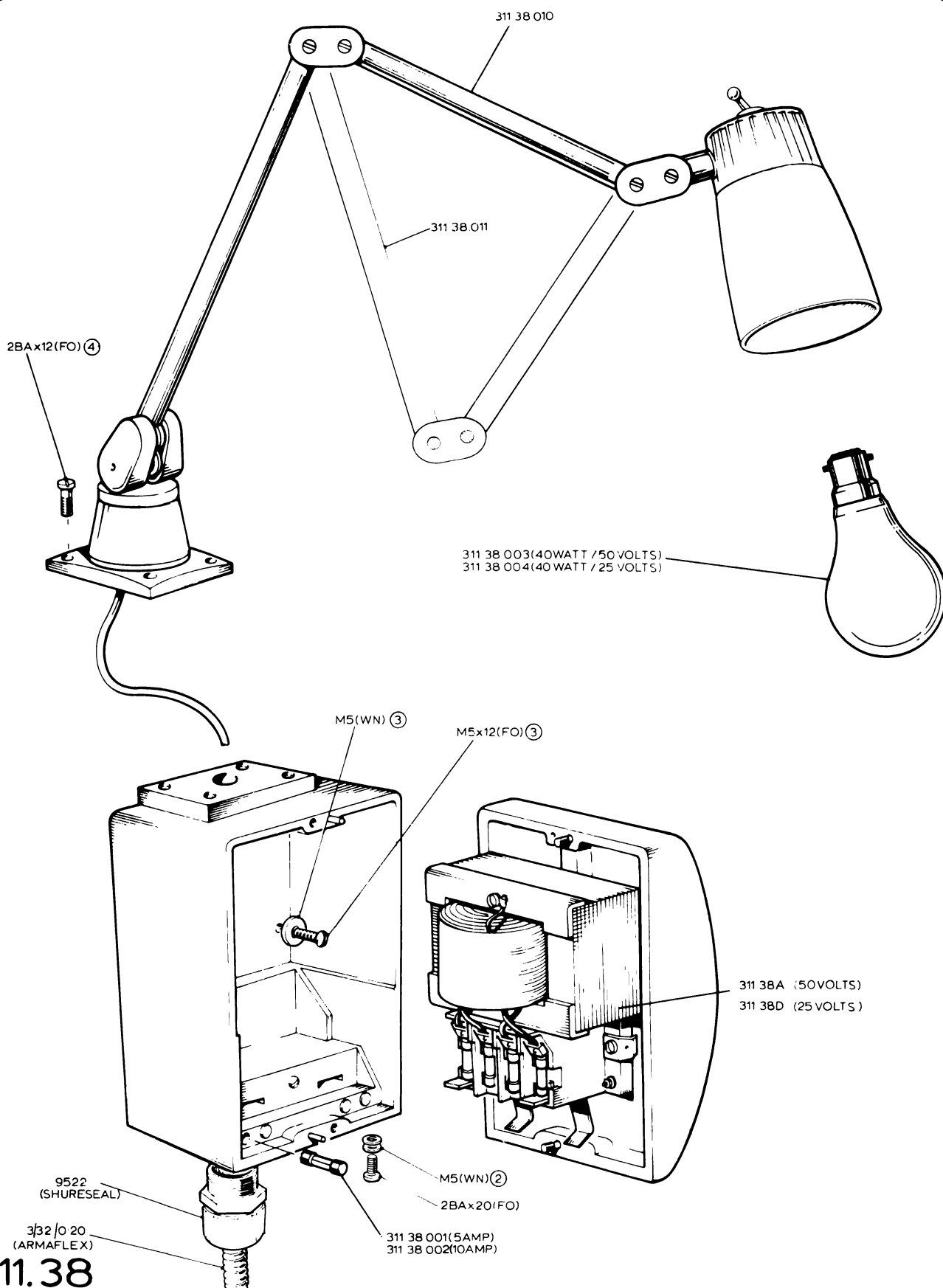
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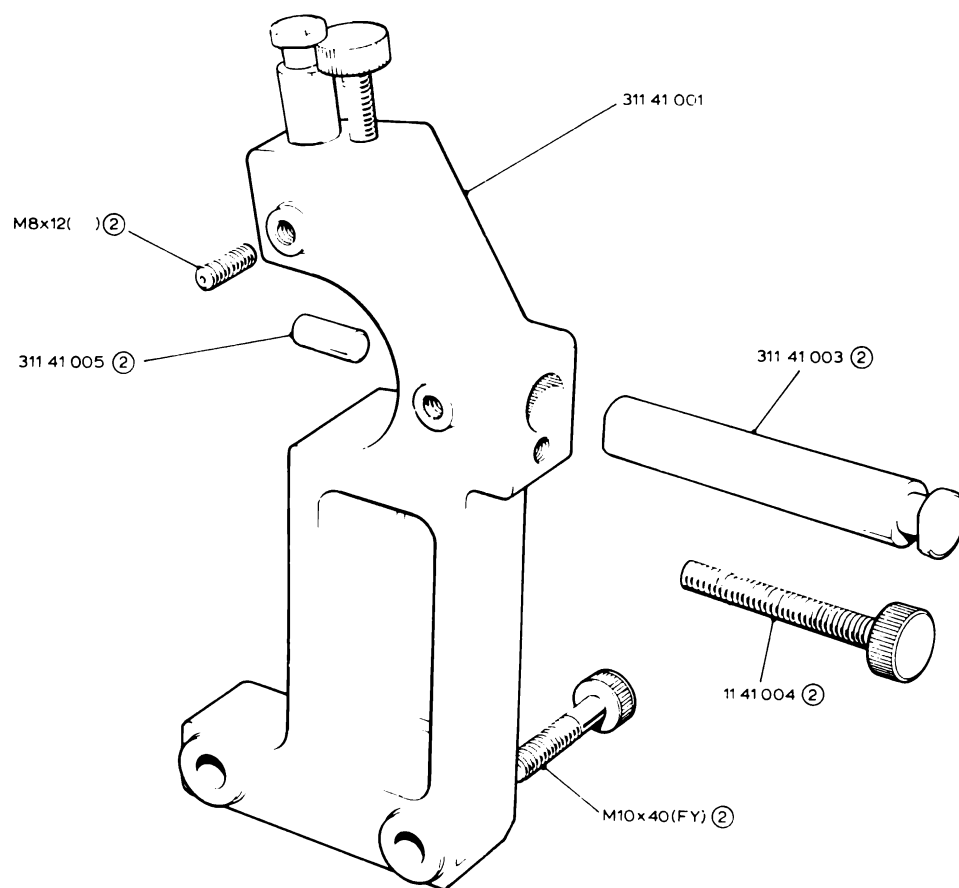
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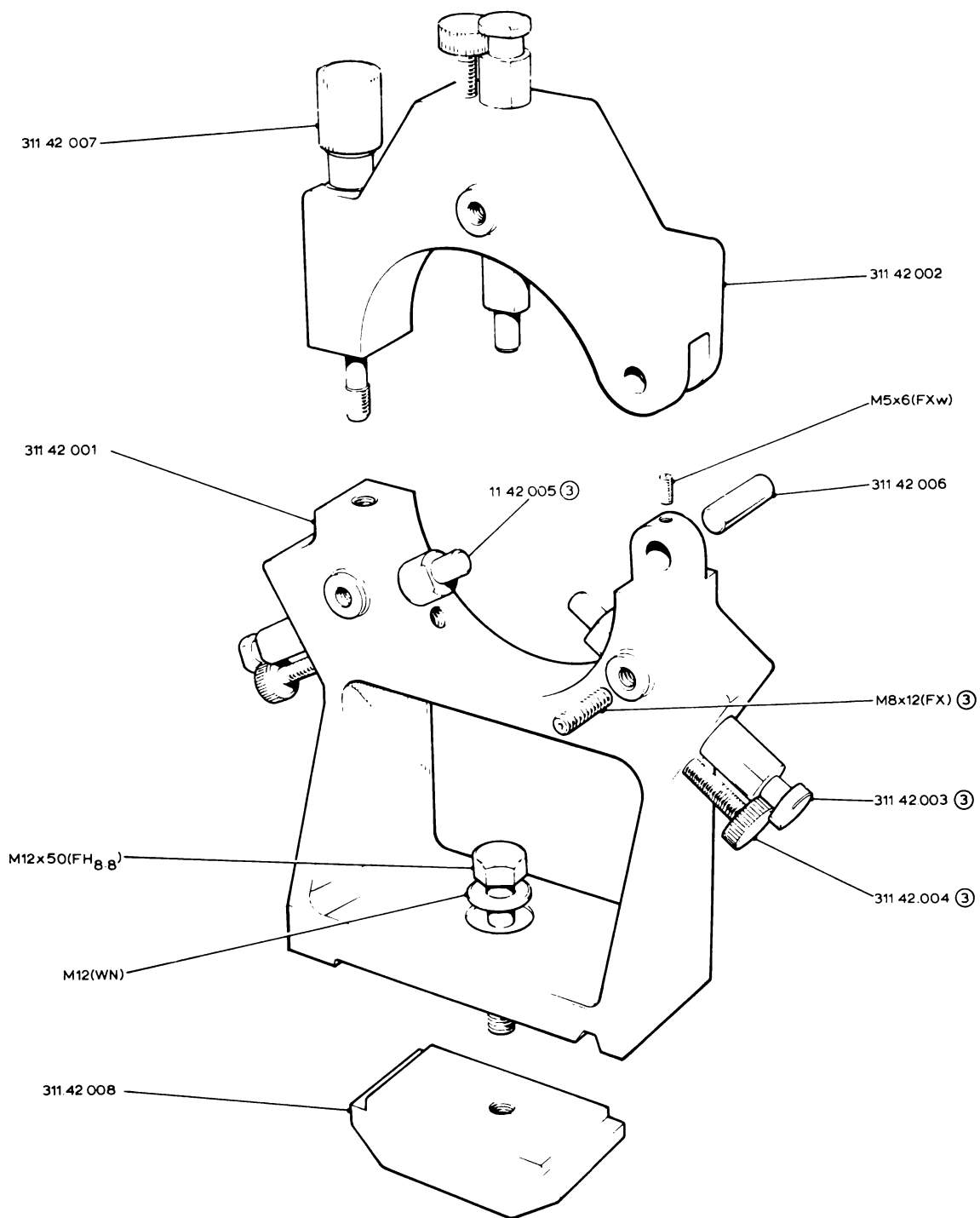
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311.41

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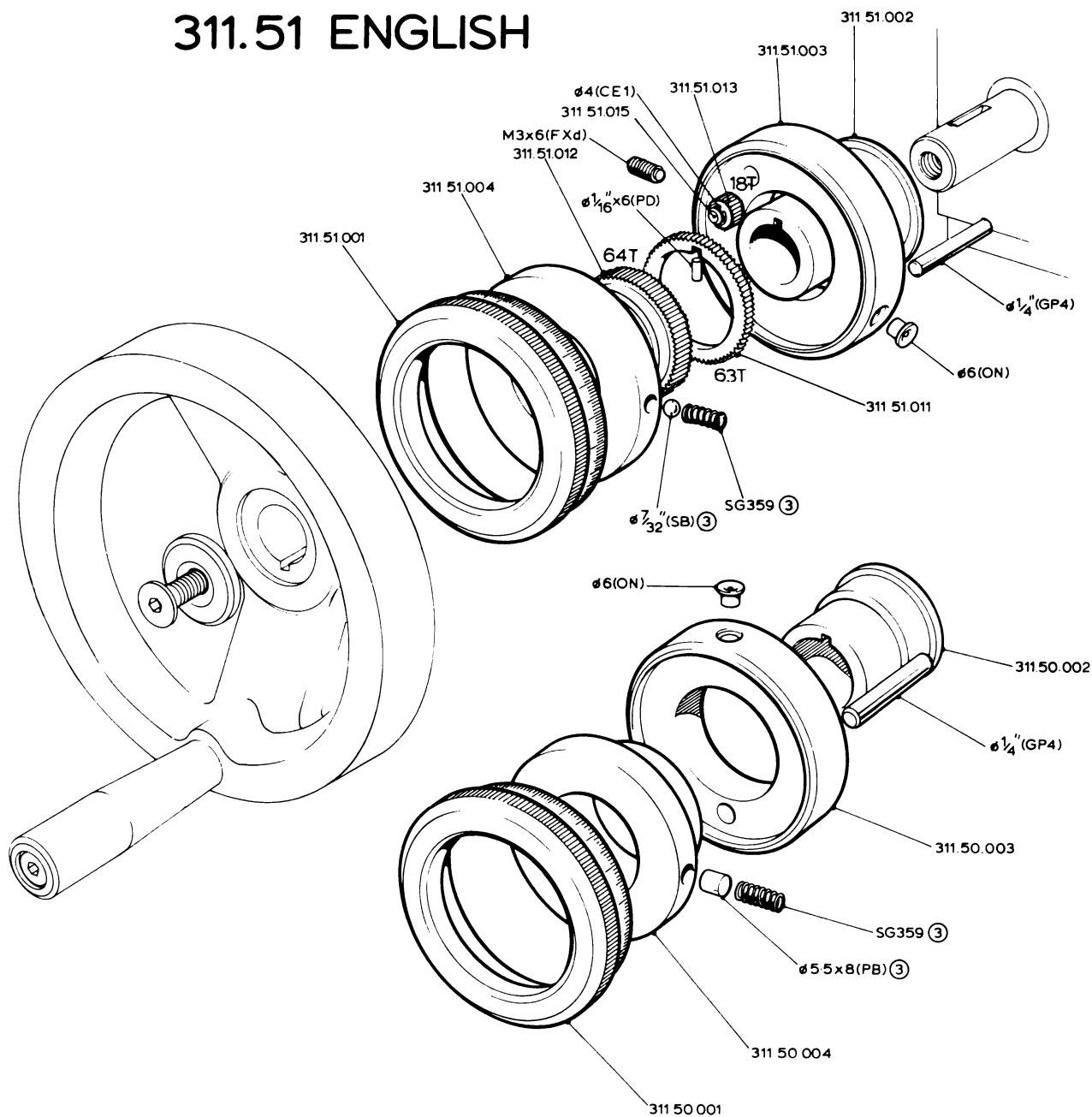


**311.42**

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## 311.51 ENGLISH

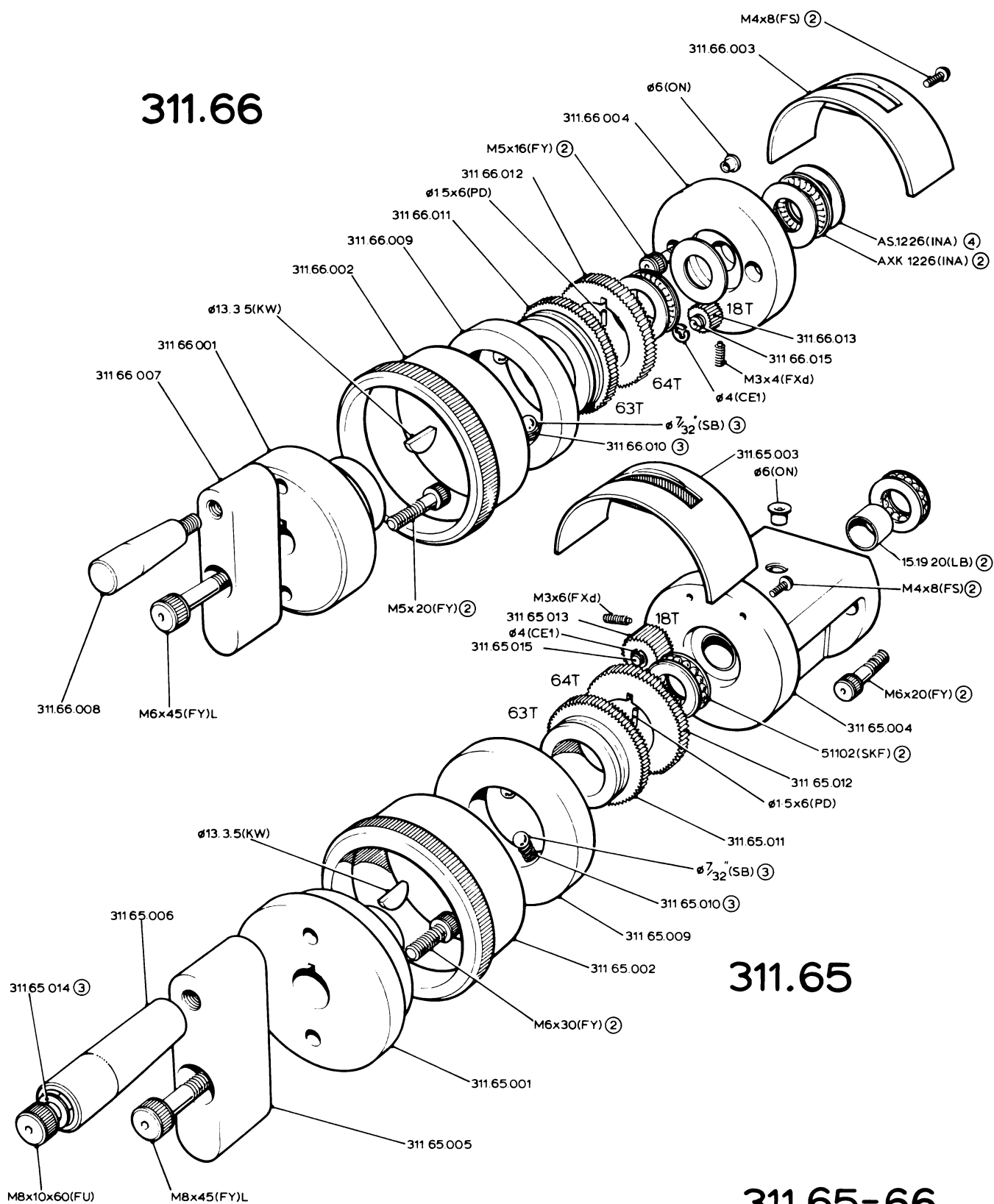


## 311.50 METRIC

311.50-51

475

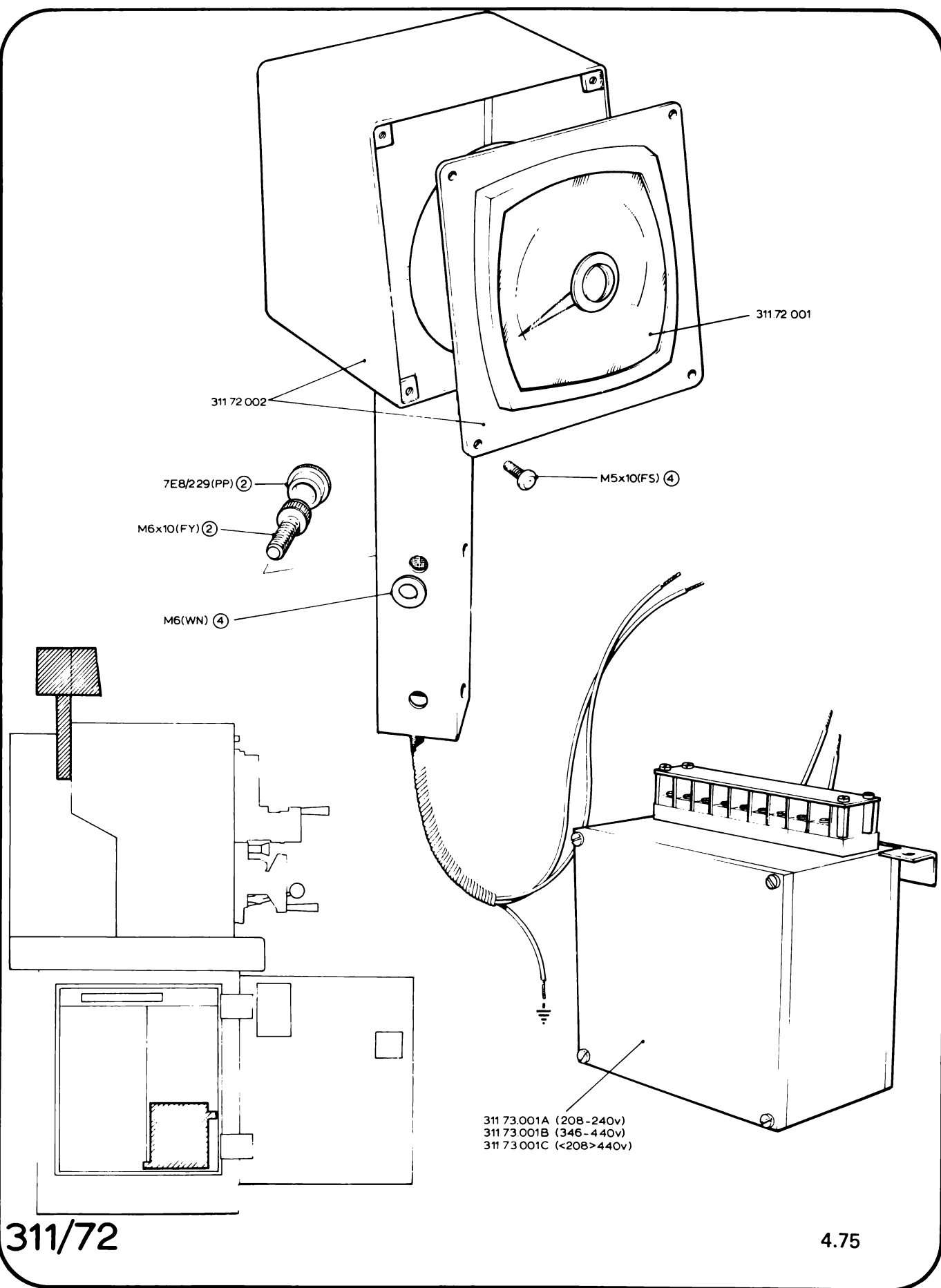
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311.65

## 311.65-66

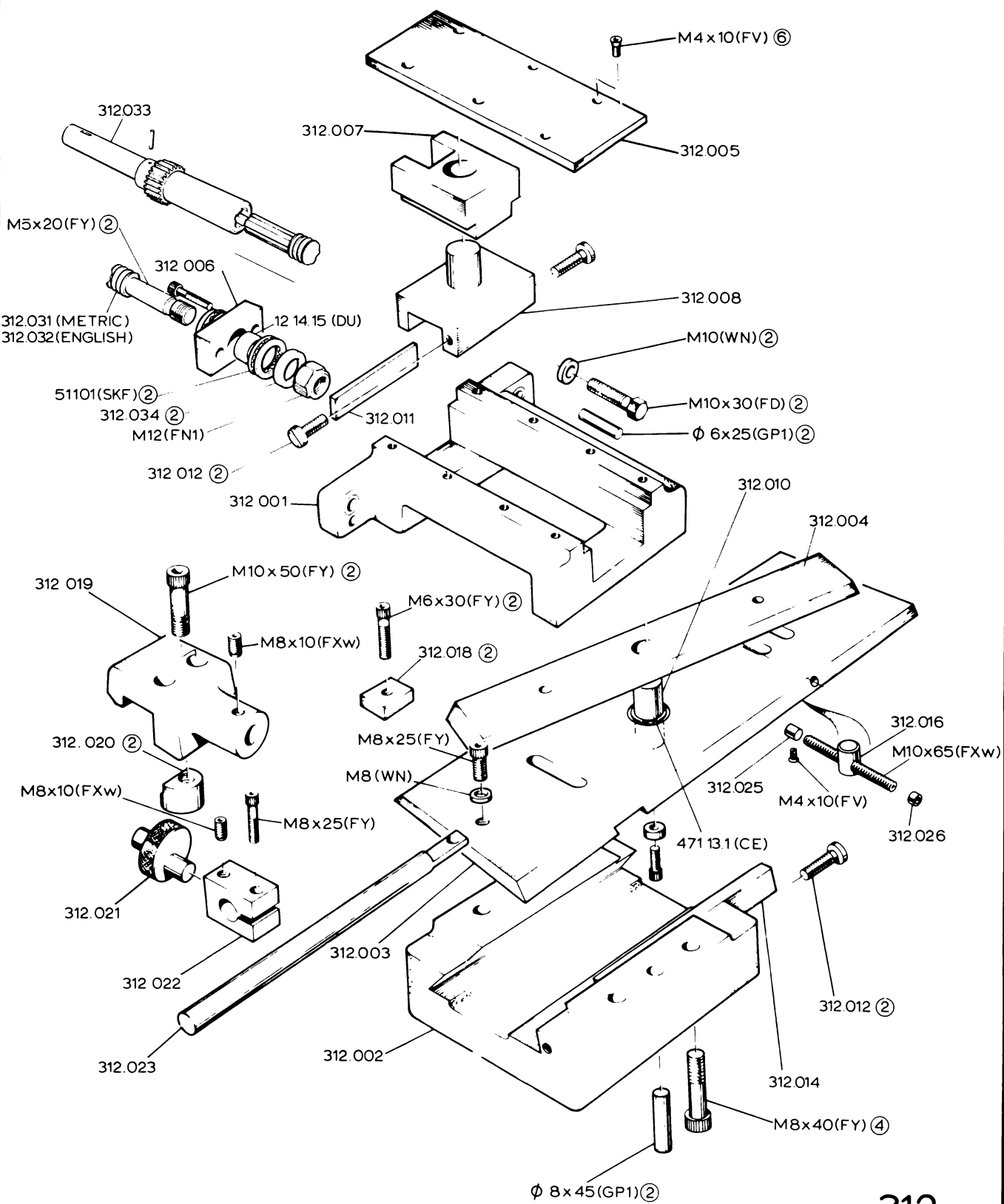
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## Attachments

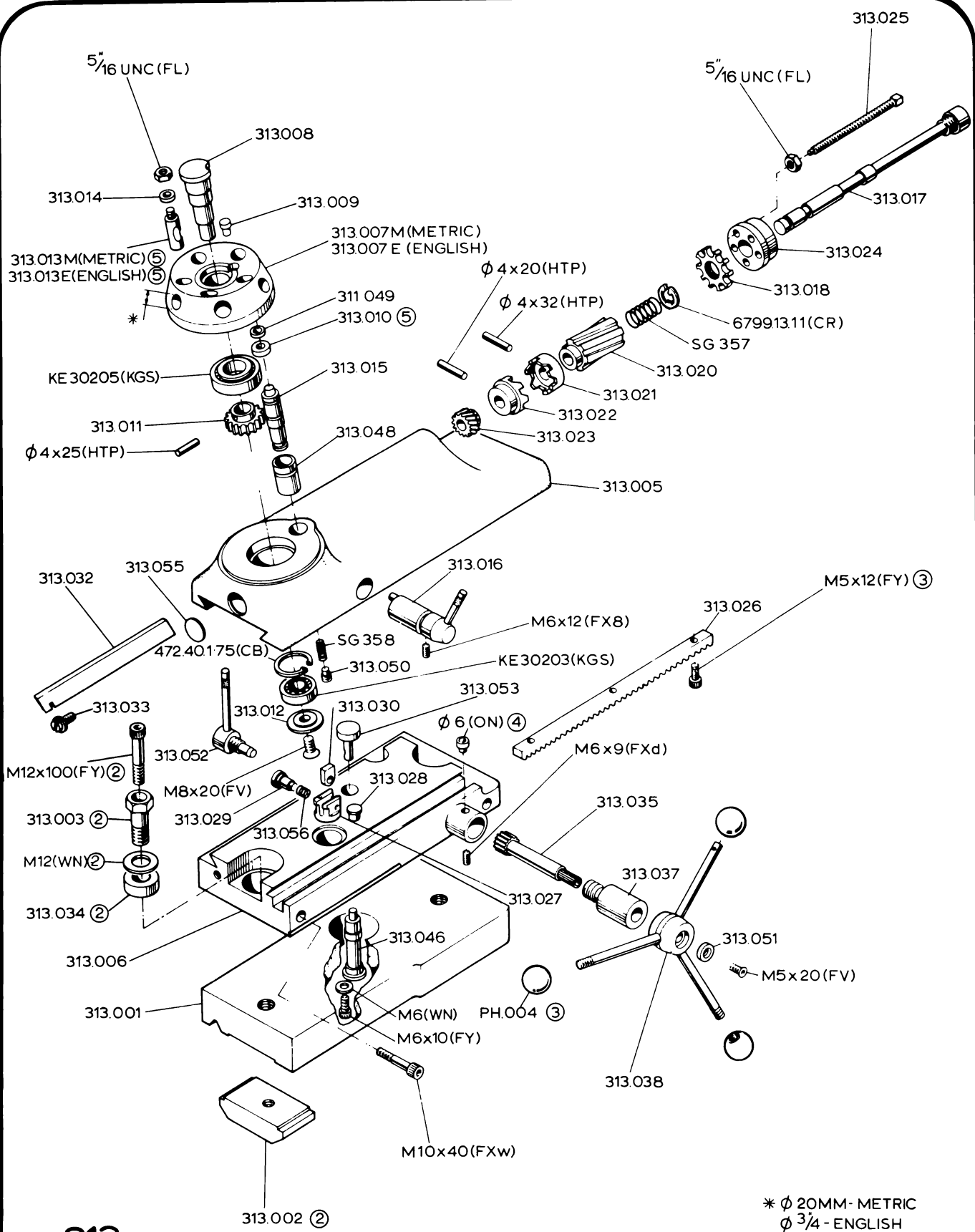
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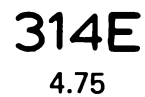
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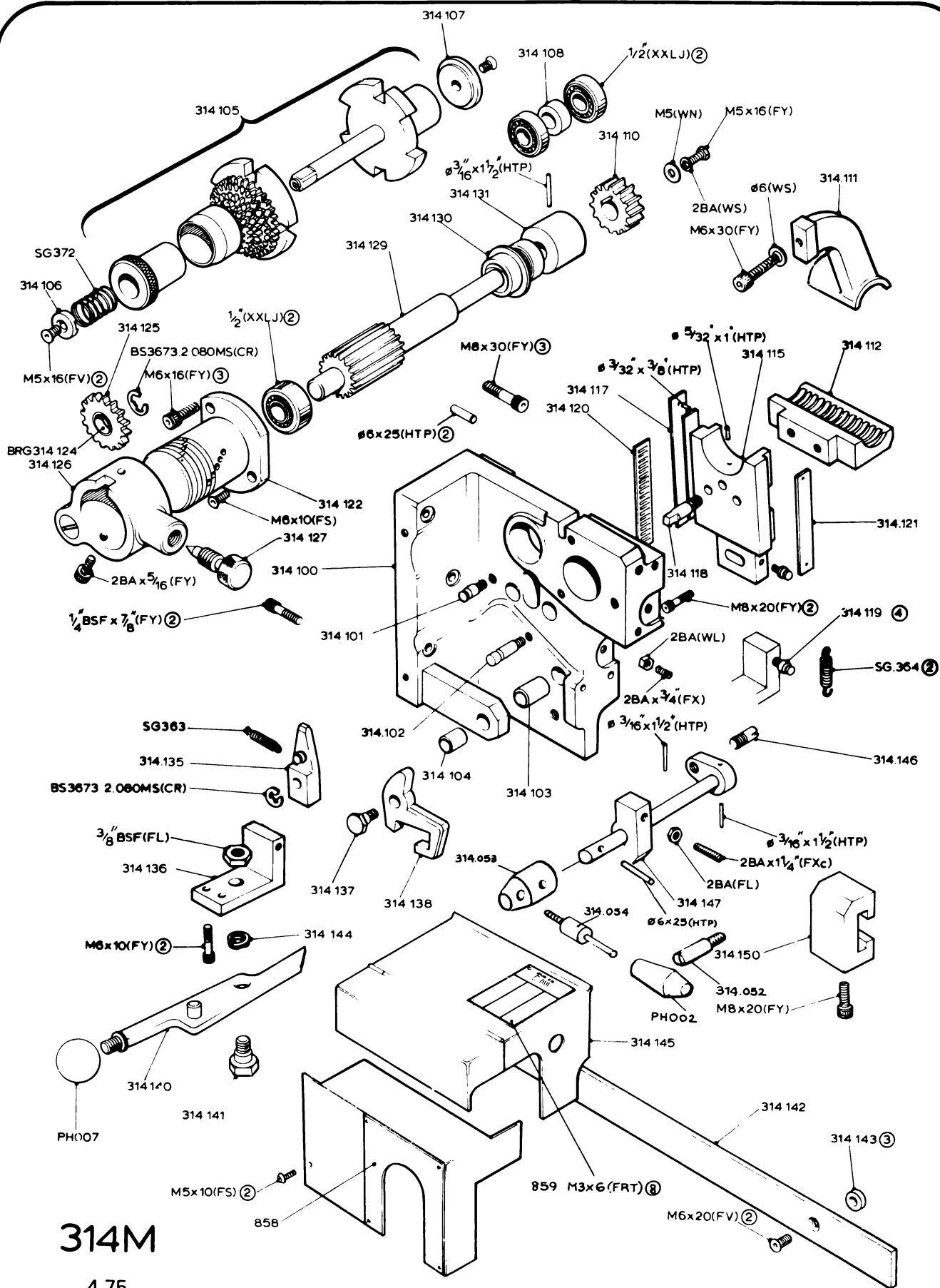


313

4.75

\* Ø 20MM - METRIC  
Ø 3/4 - ENGLISH





314M

4.75

# Standard/Proprietary Parts

Letter Codes

"Bracketed" Letter Code	Component	Conventional Description Given
<b>Screws and Nuts</b>		
FX	Socket Set (Grub) Screw Flat Point	Thread × O all Length
FXd	Dog Point (Normal)	
FXd1	Dog Point (Long)	
FXc	Cone Point	
FXw	Cup, knurled or 'W' Point	
FY	Socket Head Cap Screw	Thread × Length under head
FV	Socket Countersunk Screw	
FS	Socket Button Head Screw	
FU	Socket Shoulder Screw	Thread × $\phi$ Shank × Shank length
FP	Socket Pressure Plug	Thread and Form
FO	Slotted Set (Grub) Screw	Thread × O/all Length
FT	Slotted or Pozidriv Screw Countersunk Head	Thread × length under head
FI	Raised C/sunk Head	
FR	Pan Head	
FE	Cheese Head	
	Suffix 'B' for Thread Forming Type	
	Suffix 'T' for Thread Cutting Type	
FJ	Square Head (Toolpost) Screw	Thread × Length under head
FH	Hexagon Head Screw	Thread × Length under head
FD	Bolt	
FN	Standard Hexagon Nut	
FL	Locknut	
	Suffix '8.8' for High Tensile Types	
	Suffix 'L' for 'Self-Locking' versions of the above	
FZ	Hammer Drive Screw	Nom $\phi$ × Length under head
FW	Wing Nut	Thread details
DN	Domed Nut	Thread details
CN	Castle or Slotted Type Nut	
FNI	Nylon Ring Locking Nut	
<b>Thread Inserts</b>		
TI1	Press in Type Thread Insert	Thread details
TI2	Coil Type Thread Insert	
<b>Washers</b>		
WN	Bright Washer Normal Diameter	Nominal Hole $\phi$
WL	Large Diameter	
WK	Crinkle (Wavy) Washer	
WS	Spring Washer Single Coil	
WSs	Double Coil	
WC	Folded Copper Sealing Washer	
WF	Felt Washer	
DS	Disc Spring (Belleville Washer)	Nom. Hole $\phi$ × O.D. × thickness

"Bracketed" Letter Code	Component	Conventional Description Given
<b>Pins and Dowels</b>		
GPI	Grooved Pin Full length groove Tight at one end	Nom O all length
GP2	Half on end	
GP3	Full length groove Parallel	
GP4	Half length groove Tight at Centre	
GP5	Centre groove	
PD	Dowel Pin	Nom $\phi$ $\times$ O all length
PB	Brass Pin or Pad	
PT	Taper Pin	Nom $\phi$ (small end) $\times$ O/all length
PS	Split Pin	Nom $\phi$ $\times$ O/all length
LTP	Tension Pin Light Duty	Nom $\phi$ $\times$ O/all length
HTP	Tension Pin Heavy Duty	
<b>Keys</b>		
KS	Square Parallel Key	Width $\times$ Thickness $\times$ Length
KR	Rectangular Parallel Key	
KW	Woodruff Key	Width Height $\times$ Diameter
<b>Circlips</b>		
CE	External Circlip DIN 471	DIN Ref Nom Shaft $\phi$ and Thickness
CE1	Round Section Circlip	Nom. Shaft $\phi$ , Wire $\phi$
CE2	Inverted Retainer (Truarc)	
CB	Internal Circlip DIN 472	DIN Ref Nom Bore and Thickness
CR	Radial Fitting Circlip, DIN 6799	DIN Ref. Nom $\phi$ and Thickness
CR1	Radial Retaining Clip (Spring fix)	Nom shaft $\phi$
<b>Plain Bearings</b>		
DU	Composite Bearing Bush 'Glacier'	Nom Bore, O.D. and Length
DX		
LB	Sintered Bronze Bush	Nom Bore O.D. and Length
<b>Ball Bearings</b>		
XLJ	Ball Journal Bearing Extra Light Type	Nom Bore
LJ	Light Type	Nom Bore
MJ	Medium Type	Nom Bore
For Needle Roller Brgs, Needle Thrust Races		
Ball Thrust Brgs. and Taper Roller Bearings Manufacturers Name		
Is Quoted as Letter Code		
(INA.)		
(SKF)		
(TORRINGTON)		
or (GAMET)		
<b>Seals</b>		
SM	Standard Oil Seal	Nom O.D. and Width
SF	V Ring Seal (FORSHEDA)	Manufacturers Part No.
RM	Standard Ring Seal	of Ring, and Section
RMI	Non Ring (Pione)	Manufacturers Part No

# Letter Codes

"Bracketed" Letter Code	Component	Conventional Description Given
Lubrication Equipment		
ON	Concave Oil Nipple    Dri    Type _____	Nom Hole
ONI	Threaded Type _____	Thread details
For Compression and other Pipe Fitting    Manufacturers Name is quoted as Letter Code		Manufacturers Part Number Quoted
(ENOTS or (TECALEMIT)		
Miscellaneous Items		
SB	Steel Ball _____	Nom $\phi$
FK	Hexagon Wrench Key _____	Nom width across flats
HP	P V.C. Hose _____	Nom Bore and O D.
HC	Hose Clip _____	Max. Hose $\phi$
PP	Plastic Plug _____	Manufacturers Part Number
WRS	Standard Spanner _____	Std. Bolt size and width across flats
EB	Eye Bolt	Thread details
OW	Oil wick	Nom $\emptyset$ x Length
CT	Copper tube	Nom outside $\emptyset$
NT1	Nylon Tube Natural	Nom Bore
NT2	Nylon Tube Blue	Nom Bore
NT3	Nylon Tube Green	Nom Bore
NT4	Nylon Tube Red	Nom Bore

